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Autobiographical and Flashbulb Memories Across the Lifespan

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ABSTRACT

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The present study explored how age at event influences recollection of autobiographical and flashbulb memories. More specifically, the present study aimed primarily to understand several components of the lifespan distribution of memories, such as childhood amnesia and reminiscence bump by directly comparing these with both free recall and probed flashbulb memories across the lifespan. In addition, similarities and the phenomenological and other retrieval characteristics associated with both of these types of memories were investigated. An additional aim was to construct an index of flashbulb memory events for Turkish population. Participants, whose ages ranged from 50 to 93, were asked to provide memories in response to the cue words in the first section, to free recall personal context details of a private or public news item in the second section, and to recall personal context details for each of the 9 probe events provided by the experimenter in the third section. After the events were reported participants were asked to rate their memories on several phenomenological quality scales, which include vividness, significance, vantage point judgments, remember/know judgments, etc. Subsequently, the participants dated each of their memories. Results revealed that both types of memories produced distributions with childhood amnesia, reminiscence bump, and recency components with minor differences. Autobiographical memories peaked at

10-19 age period, whereas free recall and probed flashbulb memories peaked at 20-29 age decade. Memories also differed in term of the earliest age of memory. Phenomenological quality ratings seemed to follow the same pattern. Flashbulb memories were rated as higher in vividness and significance of the events than autobiographical memories.

Key Words: Autobiographical Memory, Flashbulb Memory, Life span distribution of memories, Phenomenological characteristics of memories, age and memory



ÖZET

Otobiyografik ve Flaş Anıların Yaşam Boyu Hatırlanması

by

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Bu çalışmada otobiyografik ve flaş anılar belirli fenomenolojik özellikleri ve zaman içindeki dağılımları açısından karşılaştırılmışlardır. Otobiyografik anıların hatırlanmasında, olayın yaşandığı andaki yaş dikkate alındığında çok belirli bir dağılım ortaya çıkmaktadır. Bu çalışmada, bu dağılımın her iki tür anı için de ortaya çıkıp çıkmadığı araştırılmaktadır. Bunun yanındaki bir diğer amaç da bir Türk örneklem için flaş anılara yol açabilecek önemde toplumsal olayların neler olabileceğinin belirlenmesidir. İncelenen fenomenolojik özellikler arasında çeşitli imgelem özellikleri yer almaktadır. Yaşları 50 ile 93 arasında değişen katılımcılardan, ilk bölümde, verilen ipucu kelimesine karşılık gelen olayları, ikinci bölümde kendileri için flaş anı oluşturabilecek kişisel ya da toplumsal olayları; üçüncü bölümde ise deneyici tarafından verilen 9 toplumsal olayı hatırlamaları istenmiştir. Olayların anlatılmasının ardından, olayın katılımcı için o zamanki ve şimdiki önemini, canlılığını, konuşulma sıklığını, ne kadar şaşırtıcı olduğunu vb ölçen değerlendirme soruları sorulmuştur. Fenomenolojik olarak ise anlatanın perspektifi ve anyı *hatırlama* ya da *bilme* olarak nasıl sınıflandırdığı sorulmuştur. İkinci ve üçüncü bölümler için ayrıca, olayın ilk duyulduğu an ile ilgili bireysel ayrıntılar sorulmuştur. Bunların ardından katılımcılardan her olay sırasında kaç yaşında olduklarını belirtmeleri istenmiştir. Her iki tür anı zaman içindeki dağılımları

açısından karşılaştırıldığında benzer özellikler gösterdiği bulunmuştur. Otobiyografik anılar daha çok 10-19 yaşlarından, flaş anılar ise 20-29 yaşlarından gelmektedir. Bu bulgu, katılımcıların şu andaki yaşlarına göre değişim göstermemektedir. Bu iki tür anı ayrıca hatırlanan en erken yaştaki çocukluk anısına göre de farklılık göstermektedir. Fenomenolojik özelliklerin yaşamboyu dağılımı dikkate alındığında, iki tür anı için de, olayın imgelemi ve o zamanki ve şimdiki önemi, anı sayısı dağılımıyla aynı modeli izlemektedir. *1960 İhtilali, Atatürk'ün Ölümü, 6-7 Eylül Olayları ve 11 Eylül Hava Saldırısı* olaylarının Türk örneklem için flaş anılara yol açabilecek önemde toplumsal olaylar olabileceği sonucuna varılabilir.

Anahtar Kelimer: Otobiyografik bellek, flaş bellek, anıların yaşam boyu dağılımı, anıların fenomenolojik özellikler, yaş ve bellek

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1. INTRODUCTION

The main purpose of the present study was to explore how age at event influences recollection of autobiographical memories. More specifically, the present study aimed primarily to understand several components of the lifespan distribution of memories, such as childhood amnesia and reminiscence bump by directly comparing these with both free recall and probed flashbulb memories across the lifespan. In addition, similarities and the phenomenological and other retrieval characteristics associated with both of these types of memories were investigated.

1.1 Autobiographical Memories

Any discussion on autobiographical memory should begin first by clarifying the concept, for there is a wide range of definition of the term. A broad definition by Conway and Rubin (1993) includes memories for events of one's life and issues related to one's self. Brewer (1986) puts that the input for the autobiographical memory is memory for information related to the self, that is, it is distinct from general knowledge and skills, memories of other people's experiences, and memories of public events. Nelson (1996) adopts a lifespan approach, and adds that "autobiographical memories are a type of episodic memory consisting of those memories that are retained and accessible to later recall, sometimes for a life time, and become part of one's life story" (p.174). Thus, the self is defined as both the content of the experience itself and the result of the experiences according to these definitions.

Retention and accessibility of memories depend on several factors, such as organization and qualitative aspects of the memories, accuracy, and phenomenological qualities of the memories. Conway and Rubin (1993) developed a model that tries to account for the processes of encoding, retaining, and retrieving

autobiographical memories. Central to the model is that autobiographical memories are developed from a hierarchically organized knowledge base that contains at least three types of autobiographical knowledge. Event specific knowledge refers to unique, single events, which contain high amounts of event specific knowledge. It is measured in seconds, minutes, and at maximum hours. General events refer to continuous or repeated events that are measured in months, weeks and/or days, and finally lifetime periods are abstract, comprehensive knowledge structures that are measured in units of years. Theoretical assumptions lead to the idea that these three structures have thematic organizing functions in terms of accessing event details; specific knowledge is nested in general events, and general events are nested in lifetime periods. Conway (1995) proposes a cyclic retrieval model of these organizing units in which the recall from a cue becomes a cue for the next cycle. Therefore, the model suggests that autobiographical memories are not stored and retrieved, but are constructed from the stored organized information and the present cue.

Several researchers, for instance, looked at what types of memories can be elicited from the subjects. Barsalou (1988) asked his participants to free recall about events that they had experienced during the previous summer. Findings suggest that the most frequently reported type of memories were summarized events; i.e. generic statements that referred to two or more similar events. Barsalou reported a very low incidence of specific events, single episodes that lasted less than a day, and noted that it is difficult to elicit specific events when directly asked. However, it is this type of memory, specific events, that are dealt with in the assumptions of many research on autobiographical memory in general. Since the investigators wanted to gain as much control over the variable under study, they focused on

specific events as the unit of memory to be investigated and gave particular instructions to elicit specific memories (reviewed in Rubin, 1985).

Thus, a research on autobiographical memory that adopts a lifespan approach should assure that the level of specificity (general, specific, etc.) of the elicited memories matches with the original assumptions.

Two issues need to be mentioned briefly in relation to age: the accuracy of memories and the phenomenology of memories.

1.1.1. Accuracy of Autobiographical Memories

An important and frequently studied issue in autobiographical memory research has been the accuracy of the reported past experiences. The general conclusion from this line of research is that people are quite accurate regarding their autobiographical experiences. It is important to note here that since there is often no way of checking whether autobiographical memories are accurate, investigators have used several strategies. The most frequently used method is checking for consistency, that is, a person's recall of an event at one time can sometime be checked against recall of the same event at a subsequent time, or against the recall of other people who may have experienced the same event.

Several researchers found high levels of accuracy in participants' episodic memory with controlled experiments. Barclay and Wellman (1986) required the participants to record events everyday from their lives. Several months later a recognition test was administered containing both actual events and foil events that were experimentally constructed by revising their actual descriptions or events taken from other participants' records. The subjects' recognition responses reached high levels of accuracy as above 90 percent, and this level was not affected by the time passed between the events and testing. There are also other studies that investigate

more remote recall, such as childhood memories, in which participants' records are verified by the records of their parents and/or significant others' reports. Bruce, Dolan, and Philips-Grant (2000) asked adults to report their earliest childhood memory (0-to-8 years old), and found that 85% of the memories were consistent with the parents' verifications.

However, there is also considerable evidence on the inaccuracy of memories, especially in real life studies. Loftus and Pickrell (1995) showed the fallibility of memories in an experiment, more specifically, how a memory is reconstructed. They asked 24 college students about 3 true events and 1 false event, and required to describe own recall of the event, and then retested two weeks later, and two weeks later again. While 68% of the participants recalled true events, a good percent (29%) recalled the false event. Although this study may not be the most appropriate comparison here because the events were not false recollections of actual the memories, but implanted memories, the findings have implications for the fallibility of the memory system.

Other researchers looked at the recall of the aspects of phenomenal experience such as emotion which may be subject to change over time. Field (1981) reported 0.88 correlation for factual information among family members, however consistency for emotions and attitudes was found to be much lower in double-assessment (0.43). One reason for similar kind of lower consistency between two testing times may be due to people's tendency to keep their memories consistent with their current views of themselves, as Robinson (1995) suggested.

Brewer (1988) was more specific on this reconstruction idea and concluded that recent memories may reflect accurate copies of the original "phenomenal

experience” but with time, original experience can be reconstructed with the influence of strong schema-based processes, such as reflection of their current views.

It is an important observation to note here that researchers generally do not claim that people’s autobiographical memories are completely accurate. In fact, for the purposes of the present study, which includes the accessibility of memories from across the lifespan, accuracy is not the primary issue. What is, rather, more relevant is people’s own beliefs about what happened. Accordingly, Bruner (1986) puts that researchers should deal with the “narrative truth” of participants’ previous life experiences, rather than the “historical truth.” The emphasis on narrative truth calls for the quality of the reports people provided.

1.1.2. Phenomenology of Autobiographical Memories

One aspect of autobiographical memory that has recently received considerable attention deals with the phenomenological experience of the memories. Part of the reason is the findings of studies regarding phenomenology is directly related to accuracy, and makes autobiographical memory accurate and real on the part of the individual.

For instance, a related characteristic about autobiographical memories is people’s beliefs on the veridicality of the recollections, in other words, whether a memory is believed to have happened or not. Examining people’s own beliefs about the characteristics of recollective memories is fundamental in terms of understanding the mechanisms underlying different types of memories. Direct evidence that confidence is related to imagery for life events comes from Brewer (1988). Undergraduate participants were required to rate their confidence and imagery on 7-point scales for randomly selected life events that they recorded before. For every response that received “certain that remember the event”, the highest score on the

imagery scale was selected. Thus, with randomly selected ordinary autobiographical memories confidence ratings are quite highly associated with imagery. A recent and contrasting finding came from Rubin, Schrauf, and Greenberg (2003). Undergraduate participants rated autobiographical memories on various scales and ratings of belief in the accuracy of their memories were predicted best by knowledge of the setting and context, and less by visual/auditory imagery and emotion.

Another component that is highly associated with episodic memory is whether a memory is remembered or just known. Tulving (1985) pointed out that “remember” experience is accompanied by feelings, specific knowledge of the event, such as sensory details, and a sense of pastness. At other times, retrieving an event is accompanied by a sense of familiarity or a belief that the information is simply “known”. Tulving (1985) also noted that these remembering experiences vary as a function of imagery. He conducted a distinctive study on “know” and “remember” responses in laboratory tasks. Participants were provided by a word recall task with varying degrees of cues. They had to indicate whether they “remembered” its occurrence on the list, or they simply “knew” that it is an item on the list. Results indicated that number of remember responses declined with the specificity of the cue. Similarly in Rubin, Schrauf, and Greenberg (2003) the degree to which participants ‘relived’ the memories were predicted by visual/ auditory imagery and emotions.

It follows from the above studies that the occurrence of imagery is an essential and important point of autobiographical memory. Centrality of imagery in autobiographical memories is inquired by several studies. In a typical recollective memory task, Brewer (1988) had his subjects record the event when an alarm signaled. At several points in time, they were required to rate their phenomenal experience as they recollect the episode that they had recorded weeks ago. A

considerable proportion of the recollections involved reports of visual imagery, and those memories with imagery component had higher levels of accuracy. Another autobiographical memory study came from Johnson, Foley, Suengas, and Raye (1988) in which they required the subjects to recall both actual past events and imagined past events. Ratings on the item “involving visual detail” were much higher in real events when compared to imagined events. Moreover, spatial layouts of the objects were more explicit in the real past events.

There are several characteristics of memory imagery outlined by the researchers, one of which is the point of view of visual images. Nigro and Neisser (1983) conducted a study in which they asked the subjects to recall some specific occasion of an activity, i.e., swimming. They found that reports of the participants could easily be classified as field memories (recollective memory images that represented the original scene from the viewpoint from which it has originally experienced); and observer memories (recollective memory images that represented the original scene as an external observer might have seen it). This interesting finding has been recently replicated by Robinson and Swanson (1993) who explored the function of these categories in predicting the emotionality of memories. After the subjects classified their responses as field or observer memories, they rated their original and current emotional intensity. One week later, subjects recalled the same events a second time, either from the original viewpoint or from the alternative perspective. Shifting the perspective from field to observer produced a marked decrease in the emotionality ratings. Thus, it can be concluded that even the emotionality of an autobiographical event depends on how one goes about remembering it.

Although consistency of the memories for emotions is influenced by schema-processes, there are findings from autobiographical memory studies that indicate that details of emotional events are retained quite well. Yuille and Cutshall (1986) interviewed 13 witnesses to a murder within 2 days after the crime, and 4 months later. Findings indicated a high degree of accuracy and low levels of decline, the average accuracy rate was about 70% even for colors of clothing,

Thus, phenomenological properties of the autobiographical memories can be summarized as follows: The information in these type of memories is expressed as a mental image, the point of view of the memory images can be from the original perspective or from the observer's point of view, they are accompanied by a belief that the event was personally experienced by the individual in his/her past.

1.1.3. Effects of Age on Autobiographical Memories

Another important and widely studied issue in autobiographical memory is how age affects recall of remote memories. This effect can be twofold; the effect of the age at which the event was experienced, and the effect of age of the person at the time of recall. The former of these effects is widely studied in studies investigating lifespan retention and accessibility of memories because, as explained by Rubin (2000), "it is one topic for which we have good quantitative description and because clear differences exist in the availability of autobiographical memories from different parts of the life span" (p.131).

The shape of the distribution of autobiographical memories was first observed in the studies where the cue-word technique was used; a revival of Galton's (1879, as cited in Crowitz and Schiffman, 1974) procedure by Crowitz and Schiffman (1974). Undergraduate participants were presented with a series of cue words, and requested to report the first personal memory that each cue elicits. Subsequently, they were

asked to return to their memories and date each one of the memories as accurately as possible. The results were quite stable regardless of the type of cue word used.

Crowitz and Schiffmann (1974) described the distribution of memories of undergraduates, with a mean age of 20, as a power function, in which memory strength decreased in a linear way as a function of the time passed since the events occurred.

The next question asked by the researchers was what the case would be with people over the age of 20. A considerable amount of studies with adults and older adults (Fitzgerald, 1988; Rubin and Schulkind, 1997; Rybash and Monaghan, 1999) have consistently shown that when the frequency with which memories fall into each decade of the participants' lives is plotted, a pattern seems to emerge which was referred to by Conway and Rubin (1993) as "among the most fascinating in cognitive psychology because they are among the most regular". Older adults reported more memories from their late adolescence and early adulthood. The resulting pattern seems to possess three separate components. The first of these components is the so-called childhood amnesia, a dramatical reduction in the number of memories reported from early childhood, approximately between 0 and 4 years of age. Rubin (2000) combined data from several studies focusing on memories retrieved from childhood years (Waldfoegel, 1948; Crovitz and Harvey, 1979; as cited in Rubin, 2000; Rubin and Schulkind, 1997) and concluded that proportion of memories remembered from childhood increases with age. The percentages for ages 0 through 7 are respectively, 0.13, 0.38, 1.68, 5.54, 12.96, 21.80, 27.0, and 30.45. Explanations for such an effect generally focus on underdeveloped cognitive abilities, such as poor encoding-storage and fast decay (Howe and Courage, 1997).

Secondly, there is the *recency effect*, which is generally described as a function that older adults report a large number of memories from the last few years of their lives. As explained by Rubin and Schulkind (1997) this is a monotonically decreasing frequency of memories as a function of the time since the remembered events occurred. Such a forgetting curve has a sharp drop at the beginning of the retention period, and a slower decline as retention time increases, which is a similar pattern to laboratory retention studies (e.g. Anderson and Schooler, 1991, as cited in Rubin and Schulkind, 1997). Rubin and Schulkind (1997) showed that this great preponderance of memories dated from recent years did not vary with age, which implies that over-reporting of autobiographical memories from the most recent 10 years of life is a constant finding which is not influenced by age of the participants at the time of retrieval. Rubin, Wetzler, and Nebes (1986) add that, similar to autobiographical memory tasks, in laboratory tasks, older and younger adults' rate of forgetting appears to be the same; implying that older adults do not have deficits in retention.

The third component is termed the *reminiscence bump*, which is characterized by the fact that distribution of memories across the lifespan deviates from a monotonically decreasing curve by showing an increase in memories from the second and third decades of life (Rubin, 1986). Moreover, Rubin, Rahhal and Poon (1998) provided substantial evidence that information encoded during adolescence and early adulthood (second and third decades) is remembered better than information encountered in the surrounding periods of life. Thus, the reminiscence effect not only calls for a high numbers of memories, but also points to a better encoding.

Rubin, (1986) plotted the curves for 70 year olds by utilizing 1373 memories cued by 20 and 50 words. Half of the memories produced were excluded from the analysis because the events that the participants recalled had occurred within the most recent year of their lives. This is an experimental control frequently used in plotting the memories in the literature, for the reason that memories from the last years would outnumber the memories from the other periods and would make difficult to see the pattern from those periods. There was a clear reminiscence bump, which peaked when the participants were 25 years old. The researchers, then, plotted the same curves for 40-, 50-, and 60-year old subjects. Bump was also observed for 50-and 60-year olds, but not for 40-year olds. Thus, they concluded that the effect is age related. Rubin and Schulkind (1997) conducted a similar study with 70 year olds this time, again excluding all memories dated in 1 year of the experimental session. 124 cues of Crovitz and Schiffman's (1974) neutral words were used. Again, similar results yielded that there was an increase of memories from 10-to 30- age period.

Besides the use of Crovitz and Schiffman's (1974, as cited in Rubin et al., 1986) neutral words for sampling of memories, other researchers used Robinson's (1976) object nouns, activity verbs and feeling terms for cueing memories. Hyland and Ackerman's study (1988) subjects were cued with Robinson's (1976). Of 72 individuals ranging from 17 to 73, only older participants (over 50) showed an increase in memories, which bumped in their early twenties and adolescence. Still a considerable proportion (47%) of the participant's memories occurred within their most recent decade. Without the memories from the most recent decade, 50- and 60 year old subjects demonstrated a similar reminiscence effect, however, the 40-year old subjects had equal number of memories from their adolescence period, twenties and thirties; moreover, 80% of their memories fall within the most recent decade of

their lives. Hyland and Ackerman (1988) concluded that for 40-year old adults any reminiscence effect was overshadowed by this recent decade.

Jansari and Parkin (1996) tried to eliminate overshadowing of memories by recent events. They also utilized Robinson's (1976) cue-words, however half of the participants received the added instruction that their memories should be older than 2,5 years. Three age groups ranging as 36-40, 46-50, and 56-60 showed, independent of the type of the instruction, slightly different results such that providing more memories from childhood and in total, events were less recent. The data did not show marked results for the two groups and the subjects between 56-60 years showed the same effect. Still, though, the two conditions show similar results to other data sets.

Thus, it can be concluded that using the standard technique of cue-word the distribution of autobiographical memories constantly yields the same pattern for people over 40. Researchers agree on using this method because, as Rubin (2000) reported it not only provides more sampling of memories on the part of subjects but also guarantees that each memory is not anchored mainly by the previously reported memories.

In addition to the cue-word studies, another technique to sample recollective memories from the lifespan from the literature appears as requesting important and/or vivid memories by free recall method. The motivation behind using such a method is that cue word method can reduce the number of possible memories that can be recalled by specifying a subset of the memories. According to Rubin, Rahhal and Poon (1998) free recall method not only reduces the sampling problem, but also require the subject to recall vivid memories which are most probably remembered best.

Cohen and Faulkner (1988, as cited in Cohen, 1996) requested from participants, whose age range is 20-87, to tell their 6 most vivid and important memories. The interesting finding is that subjects from 40 to 87 years old recalled more memories from their 0-10 age period, a preponderance of early memories. However, when the discrepant point from the first decade of life is ignored, results again yielded a considerable retrieval from the early ages of people's lives.

Similarly, Rubin and Schulkind (1997) simply asked the 70-year old adult participants to record in two or three sentences five of the most important events of their lives and to date those. While the 25 and 30-year old participants showed the retention component from the last 10 years, 70-year-old participants' reports of memories came mostly from 20-to-30 age decade.

Other researchers tried to modify the instructions for a better sampling of memories. Fromholt and Larsen (1995, as cited in Rubin & Schulkind, 1996) conducted another study and asked their participants to spend 15 minutes recalling events that had been important in their lives. Fitzgerald's (1996) study differed from the others in that he told the participants to report the memories that would go into a book about their lives. His participants showed a clear bump, starting at age 16, with a drop in the number of memories after age 25.

All of these studies utilizing the free recall procedure demonstrated a clear bump just as the one in the cue word studies. One important point to make here is that from across these free recall studies no increase had been observed in the proportion of memories from the most recent decades. Thus, important memories tend to come from the 11-to-25-age period, as Rubin (2000) commented, "at the expense of the most recent memories".

1.2. Reminiscence Bump and Other Types of Memories

Along with autobiographical events, sampled either by cue words or free recall of important events, researchers tried to find out that whether reminiscence effect extends to other domains, such as non-episodic experiences. More specifically, there are many studies that investigate how knowledge relates to age.

Several studies highlighted that reminiscence bump is not only limited to episodic experiences, it also extends to semantic knowledge. Schulkind, Hennis, and Rubin (1999) investigated the long-term memory for popular music. They requested older and younger adults to listen to excerpts from popular songs drawn from across the 20th century. Levels of emotion attached to the song and scores on artist and lyric information from the first part of the century were higher for older adults than younger adults, despite the fact that those songs are still popular today. Similarly, Schulster (1996) surveyed adults aged between 26 and 67 years old concerning their preferences for films by asking them to list five films that defined and captured their era. The average reported age to characterize “their era” was 22, and the films came generally from the 18-23-age period. Similarly, Larsen (1995) asked his older adult participants what are the memorable books they had read until the day of the experiment, he asked for the age at which they had read these books. Results produced a somewhat similar relation to age, with the twenties and thirties identified as modal. Rubin, Rahhal, and Poon (1998) investigated the multiple-choice recognition of semantic, general knowledge of the material learned at different periods of life. They reported that the questions about World Series and Academy Awards were answered more accurately when they corresponded to the 10-to-30 year age period.

It seems that the above studies that support greater preference for experiences from bump period generally come from cultural activities, reading books, watching Academy awards, listening to music. The reason for this, as noted by Rubin et al. (1998) is that cultural activities are involved in one's initial understanding of these domains as an adult.

There is another line of research that explores collective knowledge of public events in relation to age. These are the attempts which most typically employed news events questionnaires involving only the mention of event without any particular personal relation to examine memory for remote recall life events across the lifespan. The findings are, however, quite inconsistent regarding the methodologies used. For instance, Warrington and Sanders (1971) conducted both recognition and recall study in which participants were requested to sample both important news stories from a 40-year interval and names of famous people shown in photographs from a 25-year interval. Generally, young adults recalled more than older adults, but the authors found no evidence that memories from early adulthood were recalled better than recent ones. In a more recent study, Longmore, Knight, and Longmore (1990) reported that there was no evidence for a better memory for events encoded in early adulthood. They utilized a recognition questionnaire that covers six decades, however the selection criteria while preparing the items were somewhat problematic in that they could easily remove any increase from the 10-to-30 age period. For example, an item was to be correctly chosen by at least 50% of the participants, thus reducing the possibility of any age group's producing low level of recognition.

Methodologies of the above studies are subject to criticism by Rubin et al. (1998), primarily due to their lack of fixed selection procedure. For instance, the item

difficulties of the recognition questions selected from various decades would be different for the experimenters who prepare them and the respondents. A decision by the experimenter of removing an item not known to participants of certain ages would result in no effect of age.

There are also studies that show an increase of memories of public events from the same period. A general observation about these studies, however, is that since they possess a completely different sociological perspective in exploring collective memories, the researchers are not that precise about the possible age effects.

A relatively recent and most controlled evidence of survey studies comes from Schuman, Belli, and Bischooping (1997) asked 100 participants to identify the following events or people: the Holocaust, The Marshall Plan, John Dean, Woodstock, etc. Participants were found to be accurate about the details of these events especially when the event came from their transition from childhood to adulthood. An interesting finding is the time-slice errors made by the participants. People identified a more recent event as if it had happened in their teen years, pointing to a conclusion that understanding of the political world during young adulthood influences the recall of later events.

Schumann, Akiyama, and Knäuper (1998), similar with the reasoning in free recall studies, asked their participants for the most important event or change in the last century. Two samples, one from West Germany and one from Japan were used. The representative important public events mentioned by the participants were the *Second World War* for both of the groups, *Reunification* for German population; and *Gulf War* for the Japan sample. For those participants who were below age 40 at the time of World War II mentioned the event with high proportion for both of the

national groups. However, for the Gulf War, younger people, aged 20 and over at the time of the war reported the event with a high incidence. Schuman et al. (1998) suggested a broader bump for public events, for they observed memories for dramatical events, such as the building of the Berlin Wall as at small as 6 years of age. Similarly, they included early 30s to the bump, for a considerable number of subjects reported events from their 30s. Schuman et al. (1998) reported an additional observation that earlier public/national events included more autobiographical reports, while recent events generally contain factual information.

Finally, Schuman and Corning (2000) reported age effects on several numbers of events for a Russian sample. Although they investigated from a sociological point of view, related results can be found. They concluded that adolescence and early adulthood constitute a critical age for acquiring knowledge of specific public events. For instance, event details of Laika, the first mammal (dog) in space were remembered by 80% of the participants who were then 5-12 years old.

Thus, as evidence has shown, there is still substantial evidence to confirm that the reminiscence bump retains also for public events. However, results in this section should be interpreted with caution for several reasons. Since the above studies approach the issue at hand from a sociological point of view and generally deal with cohort differences and national identity framework, they do not specify age effects in detail. Moreover, these data only involve mention of events, they do not involve specific personal connections to the event itself.

1.3. Flashbulb Memories

Until here we have seen how memories relate to age in cued recall or free recall of important or vivid memories. The lifespan distributions were quite similar except for there is almost no recency with important memories, earliest recollections

from childhood were from when the participants were bigger, and reminiscence bump was from 15-to-25 age period. Public event studies yielded that reminiscence bump is retained in other domains, such as important collective events.

Brown, Shevell, and Ripps (1986) pointed to the fact that people do not experience public events only against a “public backdrop but also within the compass of our own activities”; (p. 139) that is personal facts which are extrinsic to the event may be linked in our memories of it. Such a related type of memory that lies in the intersection of public and private memories is flashbulb memory. As originally proposed by Brown and Kulik (1977), flashbulb memories refer to memories for *personal context details* of how one first learned of significant, emotional and surprising personal or *public events*, such as death of a friend, or assassination of a public figure. These are claimed to be preserved in ‘strict veridical fashion’, just like a photograph containing both the subject and the background of the scene. Examples of events used in typical flashbulb memory studies are the assassination of US president John F. Kennedy (Brown and Kulik, 1977, Yarmey and Bull, 1978), the Challenger explosion (e.g. Neisser and Harsch, 1992, Bohannon and Schmidt, 1989), beginning of the Gulf War (Tekcan, 2001; Weaver III, 1993), death of the first Turkish President, Ataturk (Tekcan and Peynircioğlu, 2002), and the resignation of British Prime Minister Margaret Thatcher (Cohen, Conway, and Maylor, 1994).

Brown and Kulik’s (1977) findings showed that these memories are remarkably vivid and resistant to forgetting. These representations are analyzed by Brown and Kulik (1977) and categorized into six canonical categories: location, ongoing event, informant, one’s own affect, other’s affect and aftermath. In order to be considered as a flashbulb memory, one or more of these categories have to be included in the memory narrative.

Brown and Kulik (1977) posited a special-purpose biological mechanism which creates a permanent record of the content of consciousness at the time of the event, and thus they more than intended to suggest flashbulb memories to be unique type of memory, meaning that flashbulb memories showed qualitative differences from ordinary autobiographical memories.

It follows from the original formulation by Brown and Kulik that flashbulb memories have a special status. One of the questions that researchers frequently ask in this domain according to Brewer (1995) is whether flashbulb memories are to be considered to be a form of recollective memory or are to be classified as a separate form of memory. Investigating whether these memories are affected from age the same way as regular autobiographical memories could constitute part of the answer. Moreover, Neisser (1982) explained the function flashbulb memories as “integrating an individual’s personal history with the history of his times.”(p.45), thus it would be informative to observe the lifespan retrieval curve for flashbulb memories in order to explore the retrieval process further.

1.3.1. Accuracy of Flashbulb Memories

There are several issues studied on flashbulb memories, one of which is their accuracy. According to Brown and Kulik (1977), they are accurate copies of the original event. They stated that flashbulb memories “are very like a photograph that indiscriminately preserves the scene” (p.74). The possible shortcoming of Brown and Kulik’s methodology in terms of providing adequate evidence for the above statement is the fact that they collected the data of the studies years after the original event.

After Brown and Kulik’s seminal paper a group of empirical studies adopted double-assessment methods; that is they measured the consistency between subjects’

initial recall after the flashbulb event and a second measure of recall after this first assessment of recall. McCloskey, Wible and Cohen (1988), for example, found only an 8% error rate between the initial recall and recall 9 months later. Such a small inconsistency which points to an almost perfect recall of flashbulb memories is not supported by other studies. Neisser and Harsch, (1992) conducted a study on the very same event with another group of subjects after the explosion, and second session after two and a half years. The results were in opposition to copy theory of memories, such that 25 % of the subjects recalled completely in error, and there were only a 7% who were totally correct. Neisser et al (1992) concluded that flashbulb memories were subject to reconstructive errors, similar to the fate of regular autobiographical memories. However, Brewer (1988) objected to this view by outlining that, in his study with undergraduates, 97% of the total errors were retrieval errors and only 3% of them were reconstructive errors. Moreover, Weaver III (1993) investigated bombing of Iraq across two times, 3 months and 12 months after the event. He reported an almost 70% overlap between time 1 and time 2. Therefore, by looking at the data it can be concluded that on the issue of veridicality of flashbulb memories were at moderate levels, when compared to regular autobiographical memories.

1.3.2. Phenomenology of Flashbulb Memories

Another issue related to accuracy of flashbulb memories is their phenomenological properties. Weaver (1993) compared flashbulb memories and nonflashbulb memories in terms of confidence. He noted that for the same levels of accuracy, flashbulb memories for the bombing of Iraq show higher levels of confidence, thus, concluding that some aspects of flashbulb memories such as metamemory beliefs lead to high levels of memory confidence. Similarly, Curci,

Luminet, Finkenauer, and Gisle (2001) reported that French people's beliefs about the consistency and accuracy of their memory reports of French president Mitterand's death were almost at the ceiling. It seems that people are more confident with flashbulb memories than regular autobiographical memories.

The imagery component of flashbulb memories is implicit, yet strong, in the statements of Brown and Kulik (1977), that is photographic image is tied up to flashbulb memories. They emphasized the high occurrence of irrelevant detail in flashbulb memory accounts, which is completely idiosyncratic. In parallel with their argument, the participants in Pillemer et al's (1992) study reported the color of the raincoat his friend was wearing at the time of the event. In Rubin and Kozin's (1984) study, the subjects rated their memory on a 7 point scale "1 means no image at all, and 7 means as normal as normal vision." (p.86). 50 percent of their subjects rated as 6 or 7, and none of them reported imageless flashbulb memories. Similarly, Neisser and Harsch (1992), while studying flashbulb memories for the Challenger Explosion, asked how the participants heard the news. 97 % of them gave imagery reports and added that their memories are very vivid. In the flashbulb memory literature vividness acts as a measure of imagery involved in the memory. It is important to note here that Brewer (1995) noted that without any data from nonflashbulb control events above evidence is not adequate to conclude the special nature of flashbulb memories. In fact, he found out evidence for irrelevant detail in a study of ordinary recollective memory.

1.3.3. Emotionality and Consequentiality of Flashbulb Memories

Other characteristics that researchers posit in order to conclude that flashbulb memories are qualitatively different from regular autobiographical memories are consequentiality, emotionality, and surprisingness of the event at encoding. Brown

and Kulik (1977) found that consequentiality, number of rehearsals and elaborateness of the memory were highly correlated. They, accordingly, proposed that the special mechanism was activated when individuals experience a consequential event. However, Shum (1998) commented that people may not know at the time of encoding that the particular event will be of importance to them later for public flashbulb memories; the event may become unimportant later. Brown and Kulik's (1977) account has been challenged by Neisser (1982) who claims that flashbulb memories are simply ordinary memories preserved by frequent rehearsal and retelling after the event. Yet there are empirical studies that questions Brown and Kulik's notion that consequentiality is important for an event to be encoded as a flashbulb memory. Pillemer (1984) investigated people's memories about the assassination attempt to Ronald Reagan. For those participants who possessed flashbulb memories, there were no effects of consequentiality and number of rehearsal; however the emotionality ratings were high. Similarly, Christianson (1989) showed that emotionality and surprisingness were not related to accuracy in recalling the assassination of Olof Palme.

Many researchers explain flashbulb memories by emphasizing the role of surprise, importance-consequentiality of the original event, emotional feeling states in general (Brown and Kulik, 1977, Conway, 1995, Pillemer, 1996). These assumptions are criticized by researchers who stress the importance of post-encoding factors (Neisser, 1996, McCloskey, 1992). The formation and maintenance of flashbulb memories result from the rehearsal of the original experience. Flashbulbs are, thus, inaccurate and prone to decay, if they are not; the chances are they are modified by continuous rehearsal processes, such as media communication, social sharing about the experience, and thinking about the event. Both of these approaches

acknowledge the role of emotion (affect) as an important determinant. Individuals remember an experience because they had felt emotionally involved when it happened and rehearsed it as time passed. The issue to be explained here is the differential retention of different memories by people for the same event. Brown and Kulik (1977) proposed that people are differently affected by the event because of different levels of consequentiality attributed to it. A recent model by Finkenauer et al. (1997) focuses on novelty as a direct determinant of surprise, while importance-consequentiality yields emotional states. This, then, accelerates the rehearsal of the event. Thus, emotion operates mainly through the rehearsal of the event by which people also maintain the memory for the personal reception context.

In addition to the intra-individual processes, recently there is an emphasis on inter-individual processes in explaining flashbulb memories. Brown and Kulik (1977) investigated flashbulb memories of African-American and Caucasian participants about the deaths of Martin Luther King and Malcolm X. Both of these events possess different levels of consequentiality for two groups. The results yielded that Afro-American subjects remembered more memories than Caucasians. Finkenauer (1997) explains this by social sharing and thinking about a public event, which shapes the content and features of the memory. The more emotional and important an event is for the social group, the more likely people will rehearse it.

In a similar vein, Curci, Luminet, Finkenauer, and Gisle (2001) compared flashbulb memories of M. Mitterrand's death in a French and a Belgian group. Results showed that French people showed higher levels of recall for the reception context and canonical details than Belgian people. French people's attributed importance and emotional state ratings were significantly higher, especially on sadness and anxiety. The durability flashbulb memory attributes does not show a great difference, both

groups showed a decline, however, French were more confident in their reports. Thus, flashbulb memories should depend on the affect experiences by the members of the social groups, and rehearsal seems to be interacting with encoding mechanisms.

1.3.4. Personal Flashbulb Memories

Brewer (1995) puts that, with public events, one cannot be sure about the true “recollective memory”. He proposes to look for private flashbulb memories in order to find low levels of forgetting on event details, given the personal consequentiality of the private experience. Rubin and Kozin (1984) confirmed this hypothesis by showing that majority of flashbulb memories, defined as vivid memories, are formed to personal life events (e.g. graduation day, an accident) rather than newsworthy events of national or international importance. Conway and Bekerian (1987, as cited in Conway, 1995) asked the participants to recall two memories, one of which has no personal importance and the other of high personal importance. Important events had significantly higher ratings of vividness than the memories for the unimportant events. Moreover, the importance level was predicted by consequentiality, emotionality, and rehearsal.

In depth-analyses reveal that in similar studies those memories outlined as flashbulbs are most of the time “one-moment-in-time” incidents, which contain even canonical categories (e.g. Pillemer, 1986, Pillemer, 1996, Jansari and Parkin, 1996). Pillemer (1986) found that the best predictor of vividness is the measure of emotional experience. Conway (1995) comments that first-time experiences may give rise to flashbulb memories because of their relevance for the self, uniqueness (surprise) and emotionality. Jansari and Parkin (1996) reported more first-time memories (date,

trips, recitals, etc.) when the memories of participants were sampled and qualitatively measures by scales of vividness and emotionality.

In conclusion, flashbulb memory is an interesting research area in terms of investigating retention of memories across lifespan given its qualitative characteristics (vividness, emotionality), and status at the intersection of public and private life.

1.3.5. Effects of Age on Flashbulb Memories

The results reported so far show that the bump effect is constant besides the facts that vivid memories have a narrower distribution than word-cued memories and location of the bump may change with different groups or special circumstances. Although not studied directly as regular autobiographical memories, there is considerable amount of research regarding the effect on age on flashbulb memory formation.

In order to monitor the principles underlying the accessibility of memories at the bump period, Fitzgerald (1995) recommended looking at whether the nature of encoding during these ages in life favored the long term retention of memories from this period as opposed to other age periods. Flashbulb memories, given their phenomenological qualities, as vivid, important and well rehearsed, would be more accessible, and, in turn, may account for the reminiscence effect.

Researchers primarily investigated possible age gradient in the formation of flashbulb memories. Yarmey and Bull (1978) reported that, in their flashbulb memory study of the Kennedy assassination, older participants who were over 54 years old at the time of the event –1963- showed lower incidence of flashbulb memories; whereas 95% of the younger subjects, who were between 11 and 54 years old, had flashbulb memories for that event.

One of the first systematical studies which investigate flashbulb memories developmentally comes from Winograd and Killinger (1978). Memories from participants who had been in different ages at the time of occurrence of various flashbulb events were plotted according to the personal circumstances question (at least one of the canonical categories). There was a linear relationship between the proportion of subjects with flashbulb memories and age at the time of occurrence of the event, namely assassination of J. F. Kennedy. Most of the subjects aged between 4 and 5 years, and all the subjects at 7 years old recalled some aspects of the reception event. Moreover, when all of the categories were considered, participants who had been 5 years and over recalled more than participants 4 years and younger. Winograd and Killinger (1978) pointed out to the possibility that older participants would have been at school when the news were announced, and therefore led to a disruption by the school routine by interruption of the school day that facilitated a distinctive memory formation. However, investigation of flashbulb memories for bombing of Pearl Harbor yielded that same age related growth, however since the bombing occurred in Sunday, there could be no doubts of any routines.

Other studies looked directly at children's memory for unusual events from everyday life in order to understand the developmental trend in the formation of flashbulb memories. Pillemer (1992) investigated memories for an unexpected, surprising event happened during their school routine; children were evacuated from their playgrounds, and police came upon setting off the fire alarm, with 3-and-half year olds and 4-and-half year olds. Children were asked open ended questions about the event and specific questions about features of the event. Although all the children had detailed memories for the event, especially when information was elicited from them by specific questions, 55% of the younger children had mistakenly report their

location when the event had occurred. 94% of the older group correctly placed themselves, and had more structured and coherent memories. Thus, similar to the findings of Winograd and Killinger, results pointed to a developmental change occurring between 4 and 5 years. Other recent research also supports this conclusion; Usher and Neisser (1993) found that memories of adults for personally significant events from childhood (birth of a sibling, death of a relative, etc.) increase with age at encoding.

Given the findings that formation of flashbulb memories appears to emerge between 4 and 5 years, and after this period incidence of forming flashbulb memories to public events and private experiences rapidly increases with age. Yet, there are other studies that investigate developmental changes in flashbulb memory formation in the old age. Cohen, Conway, and Maylor (1994) investigated the formation of vivid, flashbulb in younger and older adults in order to see whether there are any age related differences in the formation of such memories. The subjects provided detailed accounts of how they heard the news about the resignation of Margaret Thatcher about 10-14 days after the resignation and again 1 year later. By double-assessment method, the authors reported that only 42 % of the older adults appeared to have flashbulb memories (accuracy on double-reporting the canonical details), whereas 90 % of the younger participants are found to retain flashbulbs. Cohen et al. (1994) ruled out the possibility that older participants, whose mean age was 71.6, could regard the event as unimportant and unemotional by means of personal significance, emotion and surprise ratings. Their ratings did not differ from the younger group in any of these respects. In a similar vein, Tekcan and Peynircioğlu (2002) investigated the formation flashbulb memories for the sudden death of the 8th president of

Turkey, Ozal. Again, there is a lower incidence of flashbulb memories among older adults (72 %), whereas the younger participants have 90% flashbulb memories.

A general conclusion from the above findings is that older people over 60 or 70 years experience an age related deficit in the formation of flashbulb memories. These results, as well, provide cogent evidence for the presence of a reminiscence bump also for flashbulb memories, following Rubin, Rahhal and Poon's (1998) argument of "things learned in early adulthood are remembered better."

1.4. Effects of Age on Autobiographical and Flashbulb Memories

Results reported up to this point indicate how regular autobiographical, vivid/flashbulb memories relate to age. Several conclusions were drawn about their distributions, sampled memories by different methods obtained from separate groups of subjects. Although there is not any direct comparison of flashbulb memories in terms of personal context details upon hearing public and private event, and regular autobiographical memories in the literature, limited number of studies with vivid and public events may provide an opinion.

A direct comparison of autobiographical and flashbulb memories, defined as for which the subject had a highly vivid image, comes from Fitzgerald (1988). He first asked the participants to recall three flashbulb memories. Ratings including frequency of rehearsal, degree of personal importance, and degree of national importance were also provided to the participants. Memories were centered around the ages of 15-to25 with half of the memories before the participants were 30. Older group reported few memories of public events, but many memories of events high in personal significance.

Fitzgerald (1988) for a more direct comparison of autobiographical and flashbulb memories, used the regular autobiographical memory data from another

study Fitzgerald and Lawrence (1984, as cited in Fitzgerald, 1988). When compared with this previous data, vivid or flashbulb memories were concentrated in the 3-to 25 age period, whereas regular autobiographical memories showed a marked recency effect, that is most of them were recalled from recent life periods.

The first study which directly compared memories for private and public events came from Howes and Katz (1992). They had their middle ($M = 48.11$) and old ($M = 68.23$) aged subjects recall both historical occurrences reported in the news and personal events from across lifespan and used both cued (prompted) and non-cued (spontaneous) conditions for sampling the autobiographical memories across the lifespan. The results indicated public memories decreased with age, whereas autobiographical events did not. The older aged subjects were able to recall an equal number of autobiographical episodes from all life segments, whereas recall of public events tended to decrease with the remoteness of the episode. A closer look at the lifespan distribution of both types of memories indicated that for the cued recall conditions both age groups' autobiographical memories peaked around 16-to-45-age decade, whereas public memories made a slight peak around 31-to45 years of age. Public memories were less reported from the earliest age period of the lifespan, 0-to-15 years when compared to autobiographical memories.

In another similar study, Holmes and Conway (1999) found that the distribution pattern might change when private and public memories were obtained from the same participants. 30-to-70 year old participants free-recalled local, national or international events that they considered to be important, and subsequently they listed private events from their own lives that they consider to be important. The plots showed that the distributions for the public and private memories were different. It peaked during 10-to19 year old period for public memories and during 20-to-29

years for private memories. Most of the public events mentioned were political (39%), and about sports (38%); both of which peaked around 10-to-19 period. Other events were related to war, murder assassination, royal family. Private events can be categorized under 5 categories, such as relationship (17%), births/deaths (20%), home/leisure (24%), Work/education (29%), and religion (11%).

The results reported so far show that the reminiscence effect is constant besides the fact that vivid memories have a narrower distribution and the bump peaks at a different point when memories of public events are considered.

However, there are group of results which note that even this kind of generalization can be obscured when different groups of subjects are used. Japanese participants in Benson, Jarvi, Arai, Thielbar, Frye, & McDonald (1992)'s study provided vivid memories mostly from 21-to-30 decade, whereas Americans' memories come from 11-to-20 year old decade. A more striking shift of the bump appears in another study by Conway and Haque (1999). In addition to the usual location, they found a second reminiscence bump for the older group during 35-55 age period, which corresponds to an intense national conflict in Bangladesh.

1.5. Possible Accounts for the Bump

Researchers tried to account for the findings, especially occurrence of the reminiscence bump. The first explanation is called the novelty account. It suggests that events from early adulthood may be remembered better because they occur during a period in which rapid change is followed by relative stability in life. Rubin, Rahhal, and Poon (1998) propose that many novel events are encountered during rapid change period, they, then, benefit from various cognitive memory enhancing processes. These processes may be the conscious effort to understand an event which increases the retrievability of it (Bartlett, 1932), less proactive interference, that is the

preceding events may be more common (Rubin, 1986), or the distinctiveness of the novel event. Rubin, Rahhal and Poon (1998) describe that the stability period following it may allow for a stable organization because of the similarity of the experiences, and put that memories of novel events from periods of rapid change are often not of any great value during the longer period of cognitive stability during adulthood. Thus, since any cognitive activity or rehearsal does not take place, these memories are less accessible. As previously reported Conway and Haque (1999) found a second bump (35-55 age period) for the people in Bangladesh corresponding to the national upheaval in Bangladesh. Novelty account can account for this by stating that major life changes in people's lives, defined here as the intersection of personal and public histories, are by definition novel events, and may create later bumps in extraordinary circumstances.

Serauf and Rubin (1998) propose that maturation can also account for the reminiscence bump; the rise and fall of cognitive abilities may contribute to explain the bump. Whether it is efficiency or speed, the mechanisms of cognition are assumed to be working at their ultimate level between this given age range. This would lead to a more successful encoding when compared with encoding in childhood and older age. Such a straightforward conclusion is subject to criticism with empirical findings. For instance, Bersten and Rubin (2002) noted that such a general rise and fall of cognitive abilities cannot account for the bump directly. Standardized tests of intelligence, such as Woodcock Johnson IQ tests, revealed an improvement from childhood to early adulthood that could match the beginning of the bump, however, the decline that follows is much slower. They noted that linguistic abilities and crystallized intelligence stayed at a high level for most of adult life, which is inconsistent with the shape of the bump.

Woodcock Johnson IQ tests points to a sharp increase between 0 and 15 years of age (Rubin and Schulkind, 1997). Before age 4, children are not successful in many batteries such as memory, spatial relations and concept formation. Similarly, Pillemer (1992) and Winograd & Killinger (1983) had both found out that the inability of long term retention of the flashbulb memories in the younger children (4 years and younger) seems to be due to neurological immaturity, and/or due to the lack of realization of the importance of the event itself. However, after 4 years of age children seem to store episodic information at high levels. Several researchers (Fivush, 1996) have argued that the onset of autobiographical memory and offset of childhood amnesia (by the time they are 4 years old) is marked with the beginning of children sharing information their experiences to the past in their conversations with adults, they organize their experiences autobiographically in memory by learning to include references to the past in their conversations with adults.

Bernsten and Rubin (2002) argued that crystallized intelligence and linguistic abilities are at high levels for most of adult life, which is a finding inconsistent with the shape of the bump. However, there is convincing evidence that memory for specific events located in space and time showed consistent and marked decline with increasing age. Verhaegen (1993, as cited in Hultsch, Hertzog, Dixon, and Small, 1998) in a meta-analysis reported that the performance of older adults were poorer than that of younger adults on three types of verbal episodic tasks, including word list recall, paired associate recall, and prose recall.

Jansari and Parkin (1996) attempted to explain the other end of the developmental spectrum in real life cases and argued that older adults display a reminiscence bump because of an "age-related attenuation" in the retention component of autobiographical recall. That is to say, older adults are not able to

integrate, encode and retrieve new information. Cohen, Conway and Maylor (1994) and Tekcan and Peynircioglu (2002) put that in old age the level of arousal is lowered and this constant fact is associated with insufficiency for triggering the special encoding mechanism, which is necessary for flashbulb memory formation. To sum it up, the novelty account theorists state that the reminiscence bump occurs because “various biological, cognitive, and environmental factors ensure that the memories from youth are more effectively encoded, retained and retrieved” (Rubin, Rahhal & Poon, 1998, p. 12) compared to other life periods of life.

The alternative explanation for the reminiscence bump is that the period corresponds to the formation personal and social identity (Fitzgerald, 1996). Known as the self-narrative account, this explanation assumes that the self is constructed in narrative, the events from the early adulthood, outlined as the formation of identity, forms the center of that self-narrative. For instance, in Rubin and Kozin’s (1984) study, people have identified one-time occurrences, such as graduation day, first date, wedding day, etc as their most vivid and important memories. Fitzgerald (1988) found this consistent with the findings from the studies that demonstrate older and middle-aged adults display a reminiscence bump if they are asked to free-recall vivid memories, or memories that would go into a book about their lives. This is consistent with the terminology used; the recollected events should be the kinds of events to form a book that introduce themselves to others and to themselves, *a narrative of one’s life*. Elnick, Margrett, Fitzgerald, and Labovie-Vief (1999), within this line of reasoning, investigated the contents of the memories within the reminiscence bump, and they found out that they were mostly composed of experiences about family and family relationships and issues related to education and work. Fifty-six percent of the events were reported in the family/relationships domain, and 24% of them were

in the education/work domain. Elnick et al. (1999) relate these findings with Fitzgerald's self-narrative hypothesis which claims that late adolescence and early adulthood are periods of intense psychological activity related to self, such as adopting normative adult social roles, spouse, parent, and worker; and thus favoring the retention of memories from these periods.

This self-narrative account integrates social psychological theories, such as Erikson's (1985, as cited in Curci, A., Luminet, O., Finkenauer, C., & Gisle, L., 2001) psychosocial stages of development. Erikson (1985) proposes that in order for an individual to form a stable self, he/she has to resolve conflicts, which characterize the stages in a lifetime. The stages that correspond to adolescence and young adulthood are represented by identity confusion versus identity formation, both of which are significant for development, in terms of the time when the individual establishes personal goals that endure across lifespan.

Recently, researchers introduced a new concept to the field: generation identity, borrowed from Mannheim (1952, as cited in Scrauf and Rubin, 1998). Belli and Bischooping (1997) had linked the Eriksonian psychosocial identity stage with both the individual and generational identity. It occurs when the individual recognizes that he/she is part of a particular social subgroup, with which he shares common goal, knowledge and memories of similar kinds of experiences. In trying to identify himself with the group, the individual experiences cognitive effort that leads to privileged encoding of knowledge into memory and more advantaged retention of public knowledge and memory during this period. The "my era" (semantic knowledge) studies outlined in the previous section may well provide support for the formation of a generational identity during early adulthood. According to Holmes and Conway (1999), who based their assumptions on the idea of Eriksonian identity,

this “external” identity appears first in the formation of a self-narrative, and then the “internal” identity is formed. They found that the participants ranging in age from 90 to 70 years old free-recalled when they had learned public and private items of news. The results were interesting in that there were two bumps existing in the lifespan plots. The first one is for public news items and was in the period when the participants were aged 10 to 19, pointing towards the formation of generational identity; and the second one was for the private items of news occurred during the time when the participants were 20 to 29 years old. The clear evidence of the presence of a temporal shift in the reminiscence bump for the public experiences is explained by differential encoding of public events during the completion of the first psychosocial stage according to the authors. The public event knowledge ties the discussion to flashbulb memories. Neisser (1982) explained the function of flashbulb memories as “integrating an individual’s personal history with the history of his times.” (p.39). As reviewed before, formation of flashbulb memories differ not only across groups but also the age at which flashbulb memories are formed differs. Older people experience deficiencies in forming flashbulb memories (Conway et al, 1994, Tekcan et al., 2002). The identity formation occurs during early adulthood when the cognitive abilities to retain personal context details and event details are at optimum. This reveals that the self-account has got even more support from the recent studies at the level of a larger context of self.

1.6. Effects of Age on Phenomenological Characteristics

In order to understand various predictors of the bump, Rubin (2003) proposed to look at several individual processes needed to produce recollective memories that develop over the lifespan. These processes most of which has been partially

discussed in the previous sections are not usually directly studied developmentally; however indirect evidence is present from the empirical studies.

Phenomenological properties are among the most pronounced among these processes. Rubin and Schulkind (1997) asked their participants to rate on seven-point scales of phenomenological qualities: vividness, pleasantness, significance, novelty of the event, and frequency of rehearsal, and emotionality (as calculated by the absolute value of the difference of the pleasantness rating from neutral). Although separate multivariate analyses were conducted, there were no significant effects; that is, bump period was not found to be qualitatively different from other periods of the lifespan. The only interesting finding they obtained was that older participants had always higher ratings than the younger ones. In another study Rubin and Schulkind (1997) examined the cue word effects; whether properties of cue words produced differences in autobiographical memories. They investigated the correlations between the age of the memories and imagery, concreteness, and meaningfulness ratings of cue words. They found moderate correlations for almost all ages, meaningfulness rating being always the highest of the three ratings (0.47). Similarly, Conway and Haque (1999) found similar results in significance, novelty of the event and frequency of rehearsal, and emotional intensity, none of the ratings differentiate bump memories qualitatively from memories from other periods.

Bernsten and Rubin (2002) recently investigated the lifespan distribution of memories of different emotional charges simply by asking the participants' age during their happiest, saddest, most traumatic and most important events. The direct finding was that memories of the happiest and most important events formed a clear bump; whereas memories with an emotionally negative content did not. The negative

memories showed a recency effect for younger and older groups, and a lesser amount of the remote memories.

Researchers also examined the imagery components of flashbulb and autobiographical memories by imagery characteristics in order to differentiate memories as “field” versus “observer” memories, as called by Nigro and Neisser (1983). The first one refers to re-experiencing the event from one’s own eyes, perceiving the situation now much as they did before. Thus, these memories have the original point of view. In the latter one the original point of view is not taken, but the experience is from the perspective of autonomous observer. The rememberer sees himself/herself as an actor in experiencing the event. This distinction is of high value for our purposes here because Nigro & Neisser (1983) had once found out that memories low in emotional valence are recalled as field memories, and highly emotional events were recalled as observer memories. The question to be asked at this point is that how the chosen perspective influences the subjective experience of remembering. Robinson & Swanson (1993, as cited in Robinson, 1996) requested the subjects to remember autobiographical memories from various times in their lives. The participants then categorized each memory as field or observer perspective and rated its first and current emotional intensity. When a week later subjects recalled the same memory either from the original perspective or the alternative perspective, shifting perspectives caused decrements on the rated emotionality, especially when they shifted from field to observer. Mc Isaac & Eich (2002) outline that one of the factors involved in vantage point selection is the event age. The trend across studies is that people tend to see themselves as actors in the events of the distant past; on the other hand events from recent past are remembered from the original perspective

(Kihlstrom & Harackiewicz, 1982; Robinson & Swanson, 1993; as cited in McIsaac & Eich, 2002).

In order to understand the content of a particular vantage point, McIsaac & Eich (2002) conducted a study with undergraduates who undertook a series of manual tasks, such as shaping objects out of clay. They were requested to recall the experiences either from the field or observer point of view. The results yielded that field memories were full of affective reactions, physical sensations, and psychological states; whereas the observer memories were composed of information about how the participants looked, what they did, or where things were. Conway (1996) commented that the field/observer and remembering/knowing distinctions are orthogonal; and from the findings of McIsaac and Eich study, it seems that field memories are recollective experiences containing reliving.

In determining other retrieval characteristics, an interesting contribution to the area comes from Rybash & Monaghan (1999). They believe that the confusion around the accounts of the reminiscence bump stem from the fact that researchers equate autobiographical memory only with episodic memory, in both free recall and cued-recall tasks. For instance, Parkin and Walter (1992, as cited in Rybash, 1999) stated that older adults “know the present but remember the past.” (p.6). However, this study revealed that episodic memory undergoes no decline in the older age. Similarly, Schuman et al. (1998) reported that earlier public events contained more autobiographical reports, while recent events generally contained factual information. Rybash and Monaghan specifically asked in their study whether semantic memory also contributes to the autobiographical recall. Semantic memory refers to the recollections that are not related to the self; and it is accompanied by noetic consciousness, which can be explained as the feeling that we know some

information, which is subjective rather than objective. On the other hand, episodic memory is associated with autonoetic consciousness which allows an individual to become aware of his/her own identity and existence in subjective time that extends from past to the future (Tulving, 1985). These two types of memory are supposed to be separate, as is explicit by clinical evidence from amnesics (E.g. Klein, Loftus, & Kihlstrom, 1996, as cited in Rybash, 1999), but interconnected. Rybash & Monaghan (1999) tried to investigate whether this distinction helps to shed light on the mechanism responsible for the reminiscence bump. By utilizing Gardiner's (Gardiner, Richardson, Klavhen, & Ramponi, 1997; as cited in Rybash & Monaghan, 1999) remember/know paradigm, they tried to categorize each dated recollection as from semantic or episodic memory. Remember (R) responses refer to the subjects' feeling of reliving the event and is assumed to come from episodic memory; and Know (K) responses refer to the factual information about the event and are assumed to come from semantic memory. Interestingly, the results yielded a reminiscence bump both for the episodic and semantic memories, implying that a comprehensive account for the bump should consider the contribution of semantic memory, too.

In sum, evidence so far indicated that phenomenological qualities of people's recollective experiences may well contribute to the integrity of retrieval processes and they may well play a determinative role in the availability of different types of memories from across different periods of lifespan.

The main purpose of the present study was to provide further data on life span distributions of word-cued and flashbulb memories, both of which had not been systematically conducted with a Turkish sample. In addition, the present study aimed to construct an index of flashbulb memory events for the Turkish population. In order to achieve this aim two different methodologies were used, free recall and

probed recall with nine representative events. The present study also provided data on phenomenological characteristics associated with each of the memories over the lifespan.

The present study, additionally, investigated comparisons of age at event distributions of regular autobiographical memories with flashbulb memories. Almost all comparative studies up to now, though they are very limited in number, dealt with autobiographical memories and free recall of flashbulb memories (Rubin & Kozin, 1988; Holmes & Conway, 1999; Howes & Katz, 1992). More specifically, present data provided answers to such questions as whether the two distributions would show the same components, namely childhood amnesia, reminiscence bump, and recency; and whether reminiscence bump would peak at different place for flashbulb memories.

Finally, the present study tried to shed further light on whether flashbulb memories are to be considered to be a form of recollective memory or are to be classified as a separate form of memory. Phenomenological retrieval characteristics of autobiographical and flashbulb memories were examined in order to highlight the similarities and differences between autobiographical and flashbulb memories.

2. METHOD

2.1. Participants

A total of 36 participants aged between 50 to 93 years were recruited through convenience sampling method. Descriptive data regarding participants were summarized in Table 1. There were four groups by age, 50-to-59 year olds ($M = 53.87$, $SD = 1.06$), 60-to-69 year olds ($M = 64.44$, $SD = 1.50$), 70-to-79 years ($M = 74.73$, $SD = 2.57$), and 80-to-93 years ($M = 84.75$, $SD = 3.95$) This age range (50-93) were chosen as criteria because all participants would have lived beyond the 10

to 30 years of age period from memory research known as the reminiscence bump. Previous research noted that reminiscence bump was a robust effect with participants over 50 years of age, but not with 40 years old participants. Data from three participants were omitted from the analyses due to participants' lack of willingness to continue. The final sample was made up of 15 males and 21 females.

Since one of the main objectives of the present study was to explore the life span memory distribution for a Turkish sample, the sampling procedure focused on obtaining high-functioning, well-educated and culturally homogenous sample. Of all the participants 44% of them had at least middle or high education, and 55% had college or graduate degree.

In addition; ratings that were collected regarding activity levels indicated that all of the participants were quite active in terms of participating in social groups, such as clubs, local committees, reading and following visual media. Because the present study was exploratory in terms of systematically investigating private and public memories for a Turkish sample, the sampling procedure focused on obtaining a high functioning, well-educated, and culturally homogenous sample. No known neurological deficit was reported and, thus, none of the participants permanently use related medication.

TABLE 1

A Summary of the Demographic Information of the Participants

Age	Gender	Education		TOTAL
		Middle or High	College or above	
50s	Male	0	5	5
	Female	1	2	3
	Total	1	7	8
60s	Male	1	2	3
	Female	2	4	6
	Total	3	6	9
70s	Male	1	1	2
	Female	7	2	9
	Total	8	3	11
80s	Male	2	3	5
	Female	2	1	3
	Total	4	4	8
TOTAL		16	20	36

2.2. Design and Procedure

A repeated measures design was used in which age at event was the main between subject independent variable and type of memory was the within subject variable.

All participants were tested individually in their homes. They were told that this was a study on people's experiences, how they remember their private and public memories. They were also told that this was not a memory test; there were no

correct or wrong answers. All interviews were completed in one session. The test was consisted of 3 phases. In the first phase the participants were presented with cue words, one at a time, and auditory. The order of presentation of the cue words was randomized each time. They were instructed to retrieve a memory of an event of which each cue word reminds them, which lasts over a period of seconds, minutes, or hours. Participants were told to sample memories widely from across their lifespans but not to recall memories less than 1 year old. Within these constraints the participants responded with the first memory to come to mind. They were provided with an example event in order to create a lifespan look. The instruction was as follows:

For example if I were to use the word bakery, you might think of having gone to the bakery store with your mother when you were five.

The participants were asked to make descriptions generally clear and specific, but they were told to keep names and other symbols intelligible only for themselves. Once their search was completed and a full and specific memory has been formed, this was verbally described. These descriptions were tape-recorded for further reference and analysis. The interviewer made brief descriptive notes of the recollections. When a memory was fully reported, participants were asked to provide various ratings. Subsequently, the participants were reminded of their memory titles in order for them to date each memory.

The ratings that the participants were to provide were:

Consequentiality. The participants were asked to rate the perceived importance of the event then and now, respectively, on a 5-point scale ranging from 1, “it was not of consequence to me”, to 5 “it was of high consequentiality for me”.

Imagery ratings. Several scales measured imagery. First, the participants were asked to rate how vivid was the event on a 5-point scale ranging from 1 “I cannot imagine at all”, to 5, “I can imagine it with all its details as if I am experiencing it right now”.

In addition to these vividness rating, the participants were given detailed instructions about how to categorize each autobiographical memory as something they remember (*H response*) or something they know (*B response*) from their past. After this instruction they were required to classify the reported memory as H or B. Plus, in order to measure the perspective of the memory, participants were given detailed instructions on how to categorize their memories as a *field* point of view or an *observer* point of view and were required to classify their account in that respect.

Communication ratings. The participants were asked to rate how frequently they have talked about the event with other people on a 3-point scale ranging from 1, “I have not talked about it at all”, to 3 “I have talked about it frequently and I still talk about it sometimes”.

The second phase was the flashbulb memory testing phase in which free recall procedure was used. The participants were first explained the type of memory that is required; such as public or private events that had a surprising impact in their lifetime. There were no time limitations, the participants could take their time and think until they came up with an event that met these criteria. They were required to provide 5 events and none of the participants told more than five events. The average number of events provided by each participant was three. The reports were again tape-recorded. After the completion, the participants were required to date the memories. These unique flashbulb memories were dated in terms of when the

participants judge they first had become aware of the event, actual date was not required.

The last and third phase of the study was the cued flashbulb memory test. The subjects were provided with 9 public events, 8 of them of national importance, and the last item being the Terrorist Attacks at World Trade Center. The national probe events were selected from 7 decades starting from 1926 until 1993. The probe events were, namely:

Lotus Disaster –1926:	A military French ship ‘Lotus’ attacked a Turkish ship in Turkish sea borders
Death of Atatürk–1938:	Death of the first President of Turkey and founder of the Turkish Republic.
Refah Disaster –1941:	Turkish ship carrying eight military submarines was drowned at Aegean Sea.
6/7 September–1955:	Attacks of Rums residents living in Istanbul
1960 Revolution –1960:	Military coup to abolish ruling of Democratic Peak to prepare a new constitution
Death of Inonu –1973:	Death of the second president of Turkey and a popular political figure afterwards
Assassination -Ozal –1988:	Assassination attempt on the eighth president of Turkey
Death of Ozal–1993:	Death of the eighth president of Turkey
WTC attacks -2000:	Terrorist attacks on World Trade Center-New York

The participants were asked to complete the ratings given above for the first section, and in addition to those ratings, for the free recall flashbulb memory and probed flashbulb memory sections, participants were asked additional ratings.

Feeling ratings. The participants were asked first to tell how they felt at the time of the event and at present. Then s/he was asked to rate how intense was the emotion on a 5-point scale ranging from 1, “not intense at all”, to 5, “very intense”.

Surprise ratings. The participants were asked to rate the surprisingness of the event on 5 point scale ranging from 1, “ I was not surprised at all upon hearing the event”, to 5, “ I was very surprised to hear such news”.

The 5 canonical attributes of flashbulb memories were also asked in free recall flashbulb memory and probed recall flashbulb memory sessions, namely:

Source	How they heard about the news
Location	Where they were
Activity	What they were doing
Others	Who they were with
Time	Time of day

Each of the above questions was scored on a three-point scale (0-1-2) in terms the amount and the specificity of the answers. Therefore, each participant obtained a flashbulb memory (FBM) score between 0 and 10 for each of the events. The second section on free recall flashbulb memories was always presented before probed flashbulb memory section in order to prevent any anchoring.

The participants generally took about 40-50 for the first session, 30-40 minutes for the second session and 30 minutes for the last session. Each interview ranges from 1hours 10 minutes to 2 hours. The interview data sheet and the coding sheets can be seen in Appendix A and B, respectively.

3. RESULTS

Results are presented in four sections. The first section covers analyses involving distribution of word-cued autobiographical memories across the life span and analyses involving the phenomenological quality ratings of the memories. The second section covers the findings from participants' free recall of flashbulb events, distribution of those memories over a life course and the analyses of phenomenological quality ratings. The third section presents the findings from the memories of the participants for the 9 probed flashbulb events in terms of their distribution over the life span and responses to various ratings. Finally, the fourth section covers the analyses involving direct comparisons among regular autobiographical memories and flashbulb memories.

3.1. Autobiographical Memories

As reviewed in the introduction, several other studies using free and cued recall (e.g. Rubin & Schulkind, 1997; Hyland & Ackerman, 1988) showed that when the total distribution of memories is considered, an increase in memories from the period after childhood decline to about age 30. One of the main objectives of the present study was to explore whether autobiographical memories from a Turkish sample shows the same effect of age over the lifespan.

There were 36 people participating in the study and each of them was asked to respond to 6 cue words. The range of memories for each participant was between two and six. Of the 216 possible memories that respondents could come up with, there were a total of 180 memories. Three (1.6 %) of them were eliminated from the analyses due to reporting of recollections of other people by the participants.

3.1.1. Cue Word Effects

Earlier studies revealed that different cues used in word-cued studies have different effects, such as concrete and easy-to-image words produce older memories compared to hard-to-image words as contents, time, memory etc. (Rubin, 1982). A one-way ANOVA was conducted in order to examine whether there were differences between cue words regarding the age of the memories in the present study. No significant differences were found ($F(5, 171) = 1.071, p > .10$). Table 2 presents mean ages and standard deviations for the cue words.

Table 2

Mean Ages, Standard Deviations and Medians of memories in response to cue words

Cue Word	Mean	Median	SD
Vapur (Ship)	26.45	22.00	17.08
Kadife (Velvet)	26.73	24.50	14.76
Zil (Gong)	25.77	17.50	19.00
Anahtar (Key)	35.45	35.00	19.42
Çorba (Soup)	27.67	19.00	21.37
Sandık (Chest)	27.08	20.00	19.36

For more information regarding the proportion of memories in response to cue words from across different periods of lifespan, Table 3 below provides the percentages of the memories corresponding to cue words in each age decade interval.

Table 3

Proportion of memories in response to cue words corresponding to age decades

AGE at EVENT	<u>Cue Words</u>					
	Vapur	Kadife	Zil	Anahtar	Çorba	Sandık
0-9	12.1	15.4	10.0	12.9	15.6	28.0
10-29	57.6	50.0	60.0	25.8	50.0	40.0
30-49	18.2	26.9	16.7	35.5	18.8	16.0
50-69	9.1	7.7	10.0	22.6	9.40	4.0
70-over	3.0	0.0	3.0	9.40	6.30	12.0

Independent one-sample chi-square tests for each cue word were conducted in order to see whether any age decade contained more memories. The findings revealed that for each of the cue words, 10-29-age decade interval outnumbered each of the other decades, except for ANAHTAR (key), where no significant differences were found between the decades. (VAPUR: $\chi^2 (1, N = 33) = 31.09, p < .05$) (KADIFE: $\chi^2 (1, N = 26) = 10.61, p < .05$) (ZIL: $\chi^2 (1, N = 30) = 31.33, p < .05$) (ANAHTAR: $\chi^2 (1, N = 31) = 9.48, p > .10$) (CORBA: $\chi^2 (1, N = 32) = 19.56, p < .05$) (SANDIK: $\chi^2 (1, N = 25) = 10, p < .05$)

3.1.2. Memory Type Analyses

Implicit in the assumptions of many cue-word retrieval studies is that autobiographical memories come to mind in fully formed discrete units. In classifying regular autobiographical memories, however, Conway et al. (1996) identified three types of memories, event-specific knowledge, general events, and lifetime periods. On the other hand, studies on flashbulb memories focus on specific

episodes, such as hearing about particular news. The objective of the present study was to directly compare distribution of flashbulb memories with regular autobiographical events. Such a comparison would require the units of analyses to be similar. During recall of regular autobiographical memories, participants were instructed to report only specific events from their lives. "Specific" was operationalized as to have happened at a very particular place and point in time. It is this type of memory, specific events, that are dealt with in the assumptions of many research on autobiographical memory in general. Since the investigators wanted to gain as much control over the variable under study, focused on specific events as the unit of memory to be investigated and give particular instructions to elicit specific memories (reviewed in Rubin, 1985). The practical reason of using specific events for the present study was that if there were more items that include extended events over a day, the results would not be comparable with the nature of flashbulb memory creating events in the next section. Table 4 presents the percentages of the total number of memories reported by age group and memory type as categorized by Conway et al. (1996) classification scheme. A chi-square analysis was conducted in order to see if the number of specific and general memories and lifetime periods differ across various age groups. The results yielded no significant differences among age groups in terms of memory type; that is specific, general events and lifetime periods were equally balanced across different age groups ($\chi^2 (2, N= 126) = 8.52, p > .10$).

Table 4

Percentages of Memory Types across Age Groups

Age at Retrieval	Memory Type		
	<u>Specific</u>	<u>General</u>	<u>Lifetime Period</u>
50 - 59	78.6	19.0	2.4
60 - 69	78.3	17.4	4.3
70 - 79	83.3	14.8	1.9
80 - 93	64.1	23.1	12.8
TOTAL	76.8	18.2	5.0

For a more detailed comparison in terms of ages of the participants at the time of event; Table 5 provides the proportion of memories from each age decade interval in terms of their specificity. In line with the objectives, 81% of the reported autobiographical memories are *Specific* memories, and 18% of the total autobiographical memories reported are *General* memories. Only 1 % percent of the total reported memories include *Lifetime Periods*. A chi-square analysis was conducted in order to see whether the three types of memories were distributed across different ages at events equally. The results yielded no significant differences across different age at event decades in terms of memory type ($\chi^2(16, N = 172) = 8.55, p > .05$).

Table 5

Percentages of Memory Types from each Age at Event

Age at Event (N)	<u>Memory Type</u>		
	Specific	General	Lifetime Period
0-9 (27)	81	14	3
10-19 (46)	82	17	0
20-29 (36)	80	19	0
30-39 (18)	66	27	5
40-49 (19)	84	16	0
50-59 (8)	87	12	0
60-69 (10)	80	20	0
70-79 (5)	80	20	0
80-89 (3)	100	0	0
TOTAL (172)	81	18	1

Note. N stands for the number of memories from each age decade, including specific events, general events, and lifetime periods.

Thus, in line with previous intentions, there were more “specific” memories recollected by the participants regardless of ages of the participants at the time of events.

3.1.3. Distribution of Autobiographical Memories

A major concern of this study is whether reports of events across lifespan for a Turkish sample reflect the same pattern revealed in the earlier studies in the literature. The main independent variable was defined as the age of the participant at the time of the event, which ranged from 2 to 85 years. Figure 1 below displays the

percentages of memories corresponding to each age decade.

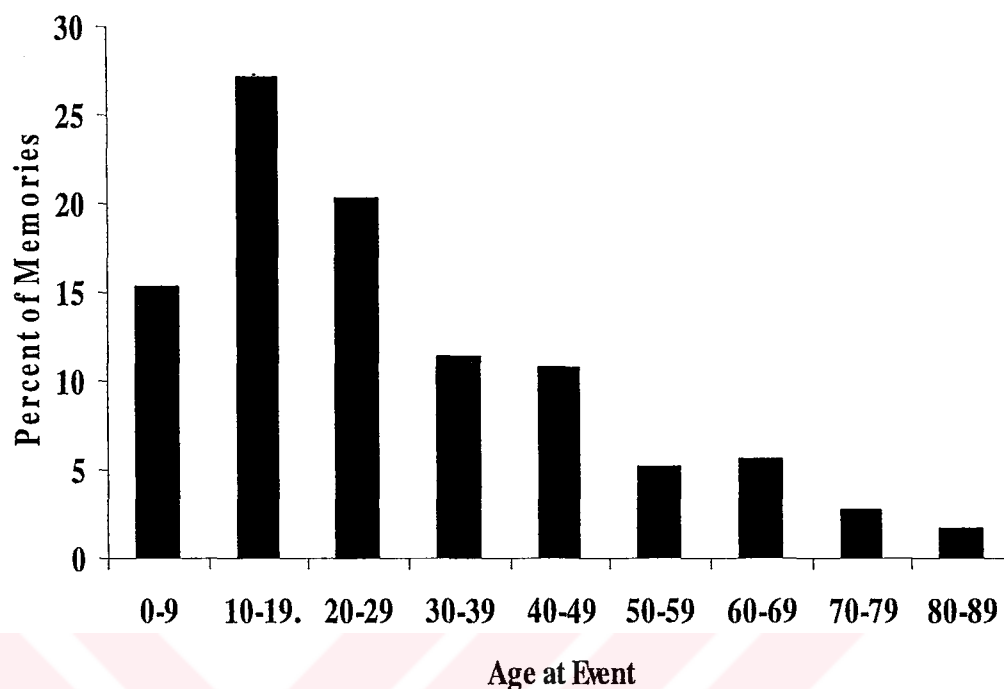


Figure 1. Distribution of word-cued autobiographical memories across the lifespan

The findings were in line with the previous work showing that people tended to report more memories from 10-to-30 years of age (almost 50% of the total number of memories). The number of memories from the first decade of life appears to be relatively less than the following two decades. It should be noted that only 30% of those memories from the 0-to-9 decade came from 0-to-5 years of age. Similarly, 70% of the reported memories from the 0-9 age period came from when the participants were 6-to-9 years of age. The percentage of memories from 30 years on tended to decrease as seen from the figure.

Although previous work showed that after 40 years of age reminiscence effects appears to be a robust finding, the distributions were plotted according to age groups in order to see whether there were any age related reporting biases and to see whether the three components of the lifespan distribution curve would be clearly

identified. Figure 2 shows the percentages of lifespan memories for each age group falling in each decade.

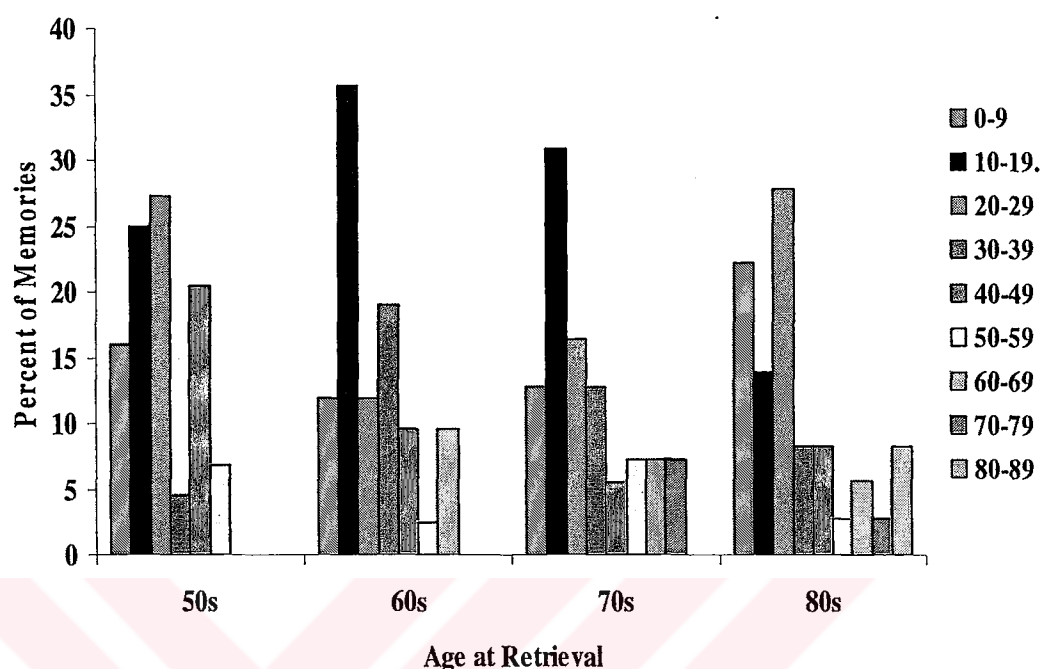


Figure 2. Distribution of autobiographical events across lifespan by age group

As can be seen in the figure, individuals in all age groups reported the largest proportion of their events as occurring during the decade of their early adulthood (10-29 age period). However it was observed that for the 50- and 80- year old participants the bump was at 20-to-29 age decade, whereas for the 60- and 70- year old participants the bump was at 10-to-19 age decade. Moreover, people who were 80 years and over at the time of retrieval reported a larger proportion of memories from the first decade of their lives as compared to 10-to-19 age decade. An advantage of plotting data as partitioned by different age at retrieval groups was that, in this way, components of the lifespan distribution curve could be seen more clearly. In fact, as can be seen from Figure 2, the recency effect was more pronounced for some age groups. People who were 60 and 80 years old at the time of retrieval

recalled more recent memories compared to previous age decade. The overall data replicated the previous findings that reminiscence bump was constant after 50 years of age.

Since some of the participants' ages did not cover all the age decades, a median split by age of participants yielded two groups, each containing 18 participants. In the younger group, ages ranged from 50 to 68 ($M = 59.4$, $SD = 2.34$). In the older group, ages ranged from 69 to 93 ($M = 80.2$, $SD = 4.70$). Younger group had memories covering 7 decades; whereas the older group's reports covered 9 decades.

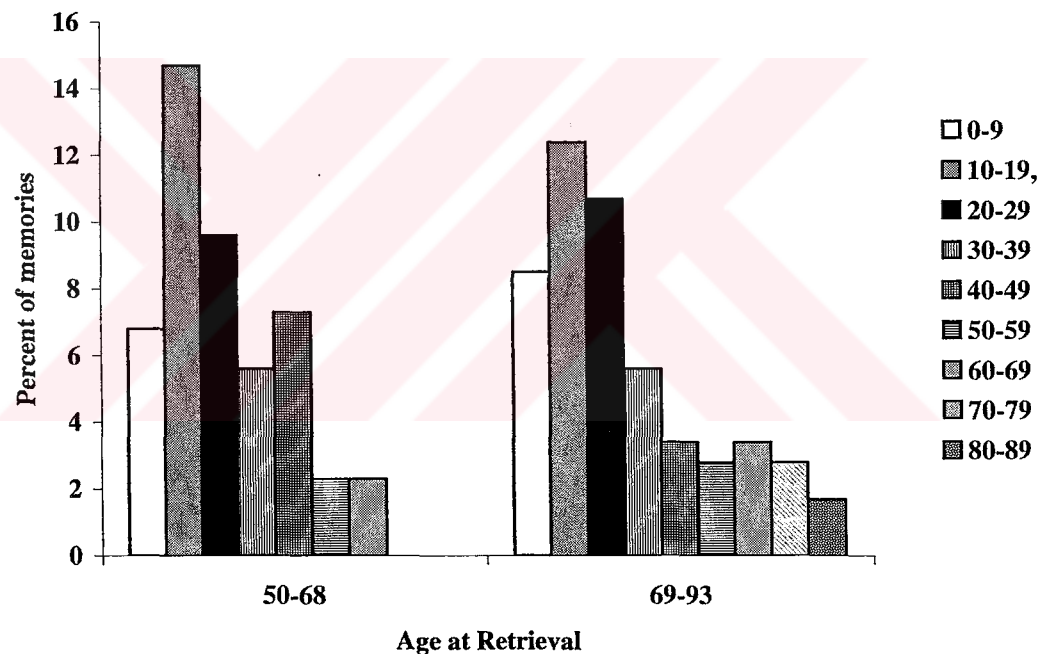


Figure 3. Distribution of autobiographical events across the lifespan by two age groups

As seen in Figure 3, individuals in both of the age groups reported the largest proportion of events as occurring during the 10-29-age interval. One difference was that older individuals remembered more events from their 0-9-age decade interval when compared with the younger group; and their recall of memories decreased as

their age at event increases; that is a yielding a distribution containing a “clear” reminiscence bump. Another general trend about the distribution of the memories of the older group was that there were disproportionately more number of memories from the 0-to-29 age period compared to 30-89 age period.

Statistically, different comparisons have been used to test for presence of the reminiscence bump. For instance, Elnick et al. (1999) compared the proportion of events reported from participants’ twenties and the average for all the remaining decades. Conway and Haque (1999) entered the raw totals from all the decades in one analysis. Rubin and Schulkind (1997) contrasted the percentage of memories in the 0-29-year period with those from the following decade (30-to-39).

For statistical analyses in the present study, counts falling in the five age periods were made of the totals for each participant; periods were 0-9, 10-29, 30-49, 50-69, 70-over. These totals were then transformed into proportions for each participant in order to make formal contrasts. The proportions of memories were contrasted in the 10-to-29 year period with those from the following decades. Repeated measures analyses of variance yielded significant results such that for all age decades, 10-to-29 age decade had greater proportion of reported memories [contrasting 10-to-29 with 0-to-9: $F(1,35) = 29.4, p < .05$;; contrasting 10-to-29 with 30-to-49: $F(1,35) = 15.82, p < .05, MSE = .788$). Thus, the reminiscence bump held for autobiographical memories for this sample.

3.1.4. Ratings of Autobiographical Memories

The next question of interest was whether bump memories would be phenomenologically distinguishable from memories from other periods.

Each of the memories was rated on several rating scales. Ratings of *vividness*, *significance of the event then*, *significance of the event now* were rated on 5-point

scales. There were two 3-point scales of *frequency of rehearsal*, and *talk in detail*.

Additionally, *novelty of the event*, *memory perspective* and *remember/know*

judgments were rated on binomial scales.

Table 6 below shows the means and standard deviations of three periods in the lifespan in order to allow comparison of 10-to-29 (bump period) with 0-to-9 (pre-bump period) and 30-to-49 (post-bump period).

Table 6

Means and Standard Deviations of Ratings by Life Period

	Life Period					
	<u>Early Life (0-9)</u>		<u>Bump Period (10-29)</u>		<u>Mid/Late Life (30-49)</u>	
Subjective Quality	M	SD	M	SD	M	SD
Vividness	4.13	1.19	4.49	0.80	3.43	0.92
Significance Then	3.60	1.22	4.10	1.01	3.50	0.83
Significance Now	3.84	1.31	3.66	1.26	2.71	1.18
Talked about then	1.67	0.73	2.16	0.75	2.09	0.72
Talked in detail	1.52	1.03	1.97	0.84	1.70	0.81

Note. All ratings are on 5-point scales where 1 = low and 5 = high; except for the last two ratings are on 3-point scales.

As shown in Table 6, on all subjective rating scores had higher ratings for the bump period when compared to other periods from the lifespan, namely early life (0-to-9 years old), and mid/late life, which corresponds to post bump period (30-to-49 years old). The mean scores of the ratings of memories from each life period for each participant were calculated. The means and standard deviations in Table 5 were calculated for the whole sample of memories. Univariate analyses of variance on subjective rating scores with life period as a within subject variable revealed significant effects. Contrasts of vividness 0-to-9, 10-to-29 and 30-to-49 age periods

yielded a significant effect of life period ($F(2, 22) = 22.38, p < .05, MSE = 4.85$).

Within subject contrasts yielded that memories at 10-to-29 age decade were rated as more vivid than 30-to-49 memories, however they were not rated as significantly higher than memories from 0-to-9 years of age.

Univariate analyses of variance were conducted to see whether *significance at the time of event* and *its significance now* differed between pre/post/bump periods. A significant difference was found for *significance of the event at the time of event* ($F(2, 22) = 18.20, p < .05, MSE = 7.38$). While within subjects contrasts did not reveal significant results for the difference between pre-bump and bump periods, post-bump period was found to be statistically lower than the bump period.

Similarly, *significance of the event now* ratings differed across three periods of the lifespan ($F(2, 22) = 15.92, p < .05, MSE = 11.44$). Memories from both the bump and the pre-bump periods were rated as more significant on current evaluation compared to memories from the post-bump period.

Analyses on *frequency of talk* and *talk in detail* ratings did not reveal any significant differences among the three periods of lifespan ($F(2, 20) = 2.71, p > .10, MSE = 1.28$; $F(2, 20) = 2.67, p > .10, MSE = 10.53$).

Further analyses were conducted on the effect of life period on the significance at the time of the event and significance now. A 2 x 3 ANOVA revealed that there is a main effect of life period, however there is no effect of significance at the time of event and at the time of retrieval. There is an effect of the interaction ($F(2, 20) = 8.62, p < .05, MSE = 3.27$).

In search of the possible predictors of the pattern of lifespan distribution curve, we looked at how the ratings that possess the highest scores were distributed across the lifespan.

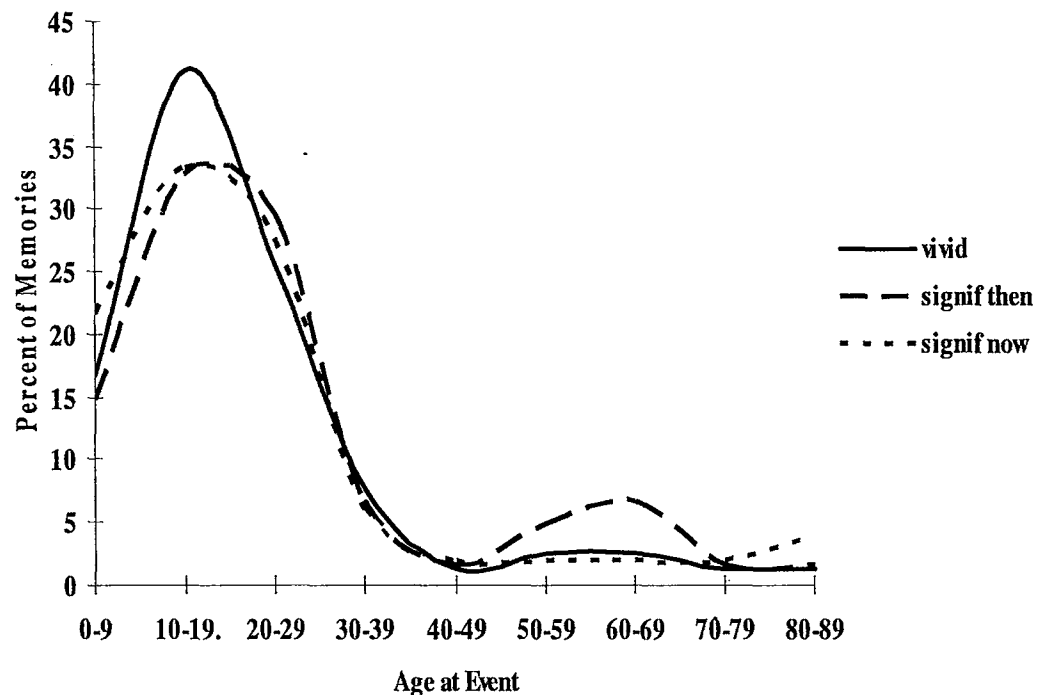


Figure 4. Distribution of memories rated as “very highly”

As can be seen from figure 4, approximately 65% of the participants who gave the highest ratings for vividness and significance of the event were from the 10-29-age decade. The bumps are much more pronounced here when compared with the life span distribution of the number of memories from each age decade. The drop is sharper in the distribution of ratings as it is also explicit with the statistical contrasts. It is of importance to note here that the rating distribution is able to predict the bump only for the highest ratings; for the lower rating scores the pattern is obscured.

3.1.5. Phenomenological Characteristics of Autobiographical Memories

In order to explore how phenomenological retrieval characteristics for word-cued autobiographical memories were distributed across the lifespan, remember/know judgments and vantage point selections were asked to the participants.

Remember/Know Judgments Participants were instructed to decide if the memory triggered by each cue word should be characterized as a Remember response or Know response. As seen in Figure 5, a similar distribution pattern becomes available when these proportions were plotted.

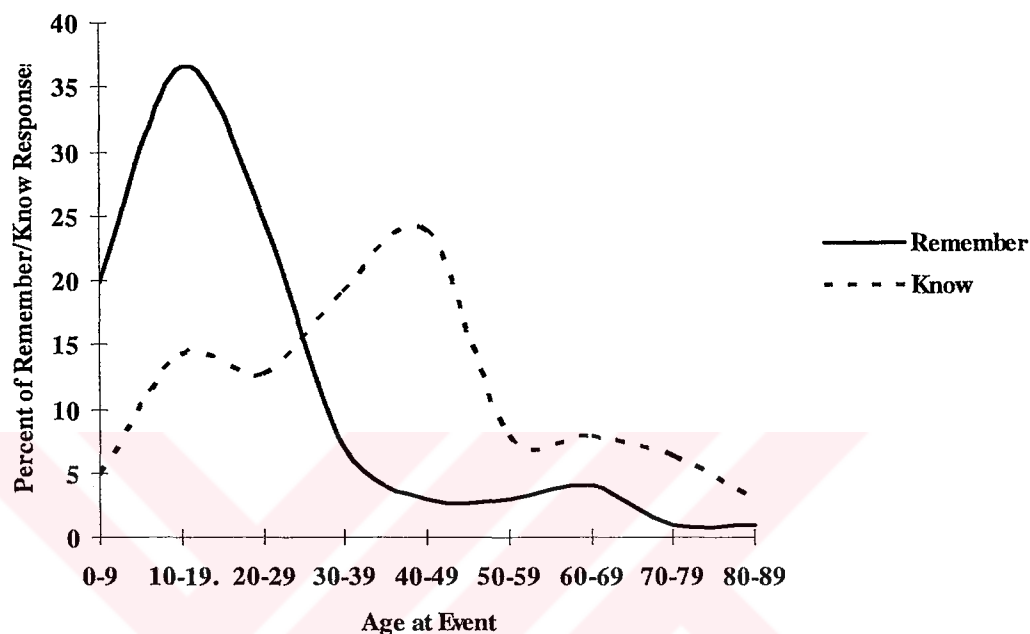


Figure 5. Distribution of R/K Autobiographical Memories

For statistical analyses, the proportions of memories that the participants classified as R/K responses with different age decade intervals were calculated. A repeated-measures ANOVA on the proportion of memories categorized as R responses within each of the nine age intervals was conducted. For each participant the proportions of responses across all the age decades added up to 1. The first three decades of the lifespan were dominated by remember responses. An interesting finding is that participants have an unexpected proportion of remember responses from when they are 0-to-9 years old; and a pronounced drop in the 30-to- 49 age decade. After 30 years of age there were a small percentage of remember responses. Statistically, events 10-to-29 bump period had significantly more “remember”

judgments compared to 30-to-49 age period. ($F(1, 36) = 3.55, p < .05, \text{MSE} = 0.35$). However, 0-to-9 age period is not significantly higher than the bump period in terms of the proportion of remember responses.

Judgments on the Perspective of Memories Another phenomenological dimension in retrieval of memories was the memory perspective, or in other words, vantage point selection. The participants were instructed to categorize each memory corresponding to a cue word as having a Field perspective, or Observer perspective. From the whole data there were comparable number of observer memories (44.9 %) and field memories (43.7 %). 9% of the reported memories had shifting perspectives which included Both field and observer perspectives, and these memories categorized as Both occurred only during when participants were 0-to-9 years old.

Interestingly, as is explicit from Figure 6 below, there are disproportionately more field memories (70%) from the bump period. Observer memories, on the other hand, had a peak at 40-to-49-age period (88%).

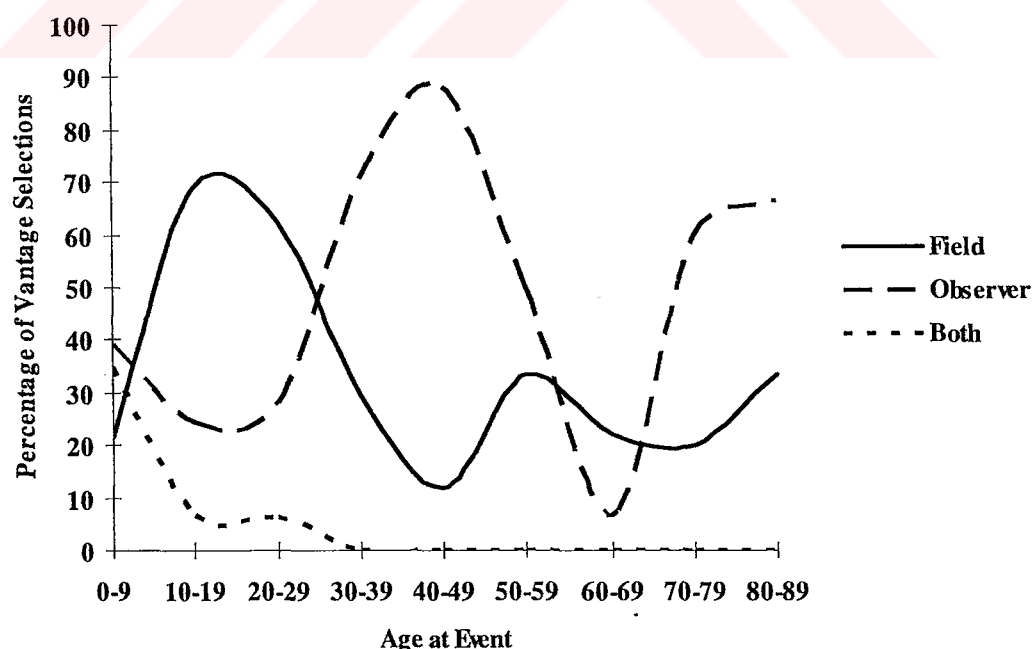


Figure 6. Distribution of F/O Autobiographical Memories

In sum, findings from the present section revealed that word-cued memories peaked at 10-19 age period. No age differences were observed when the distribution curve was plotted for each of the 4 age groups (50-, 60-, 70- and 80+ year olds). The word cues did not reveal any biases in terms of differential reporting of memories from across different age periods across the life span. There was a preponderance of specific memories from all periods of lifespan. Moreover, there were qualitative differences in terms of vividness, significance of the event now and then among the memories from the bump period and the 30-to-49 age period, but not from the memories from the 0-to-9 childhood years. Frequency of talk and talk in detail variables were not found to be different across different periods of lifespan. In addition to that phenomenological retrieval qualities, specifically remember judgments and field vantage point of the recollections peaked around the same time point in lifespan (10-29).

3.2. Free Recall Flashbulb Memories

Another question addressed in the present study was how age had an effect on free recall personal context details of public/private events. Previous studies regarding the lifespan distribution of similar type of memories either looked at the effects of age-at-event only on the mention of public events, or on private/vivid events. The present study dealt with events that have flashbulb qualities and required the participants to free recall the specific moments when they had learned about 5 specific news items being either private or public from their own lives. The range of memories for each participant was between one and five. They were asked to complete the phenomenological quality ratings afterwards.

Results regarding the sampling of free recall flashbulb memories primarily deal with proportions of the most frequently used events and their flashbulb scores.

Table 7 below presents the percentages of most frequently mentioned events by the participants, along with their flashbulb memory scores, ranging from 0 to 10. Participants' flashbulb memory scores, if applicable, for these events were calculated by asking personal context questions. Specific questions were source, location, others, time, activity, each are scored according to their specificity out of 2 points. The maximum score that could be gained was 10.

Table 7

The proportion of frequent free recall flashbulb events and their flashbulb memory score means and standard deviations by age group

<u>Younger Group (50-68)</u>				
Event	Percent of mention	N	Mean FBM Scores (R = 0-10)	SD
Private event	16.7	10	9.63	0.72
Cyprus Military Operation	13.3	8	7.14	1.67
HSBC Attack	11.7	7	8.57	2.14
1960 Revolution	8.3	5	8.60	1.34
1999 Earthquake	8.3	5	9.60	0.89
1980 Revolution	6.7	4	6.67	0.57
Execution of Menderes	5.0	3	6.33	3.05
Execution of Deniz Gezmiş & Friends	5.0	3	9.00	1.00
Korean War	5.0	3	5.00	1.41
<u>Older Group (69-93)</u>				
Event	Percent of mention	N	Mean FBM Scores	SD
Private event	43.7	28	9.84	0.65
Execution of Menderes	9.4	6	8.67	3.50
Death of Atatürk	7.8	5	9.50	1.00
1960 Revolution	6.3	4	5.75	4.03
6/7 September	6.3	4	9.67	0.57
World War II	4.7	3	6.00	3.00
1999 Earthquake	4.7	3	9.00	1.00

As Table 7 outlines there is a general trend of greater recall of private memories in the older group compared to the younger group. 26.6% of the total number of the mentioned events was private events, 13.3% of the younger group, and 35.9% of the older group. In both of the groups, private events included first time experiences; such as marriages, death of significant other (father, mother or spouse), birth or announcement of birth of a child / grandchild. A list of mentioned private memories can be found in the Appendix.

The present study was the first systematic attempt to collect events from a Turkish sample. A full list of events, their percents of mention, and frequencies can be found in Appendix C. The brief descriptions of events can also be seen in Appendix D.

Participants' flashbulb memory scores for these events, if applicable, were calculated by asking personal context questions. Specific questions were Source (How they heard about the news), Location (Where they were), Activity (What they were doing), Others (Who they were with), Time (Time of day). Each of these questions was scored according to their specificity out of 2 points. The maximum score that could be gained was 10. The highest flashbulb memory scores for both younger and older populations were for private events. For this analysis, only private events that had the "news" event quality were selected. The public events which had the highest flashbulb memory scores for the younger population were *1999 Earthquake*; and *6/7 September* for the older population.

3.2.1. Distribution of Free Recall Flashbulb Memories

Another major question of this study was how the pattern of distribution would be if both public and private events were sampled from the same participants. As shown in the previous section, distribution of autobiographical memories sampled

by the cue-word technique retains a clear reminiscence bump, confirming the earlier studies. Figure 7 below shows the lifespan distribution of free recall flashbulb memories. As clearly seen, individuals reported the largest proportion of their events as occurring during the decade of adolescence and early adulthood, more specifically the bump period.

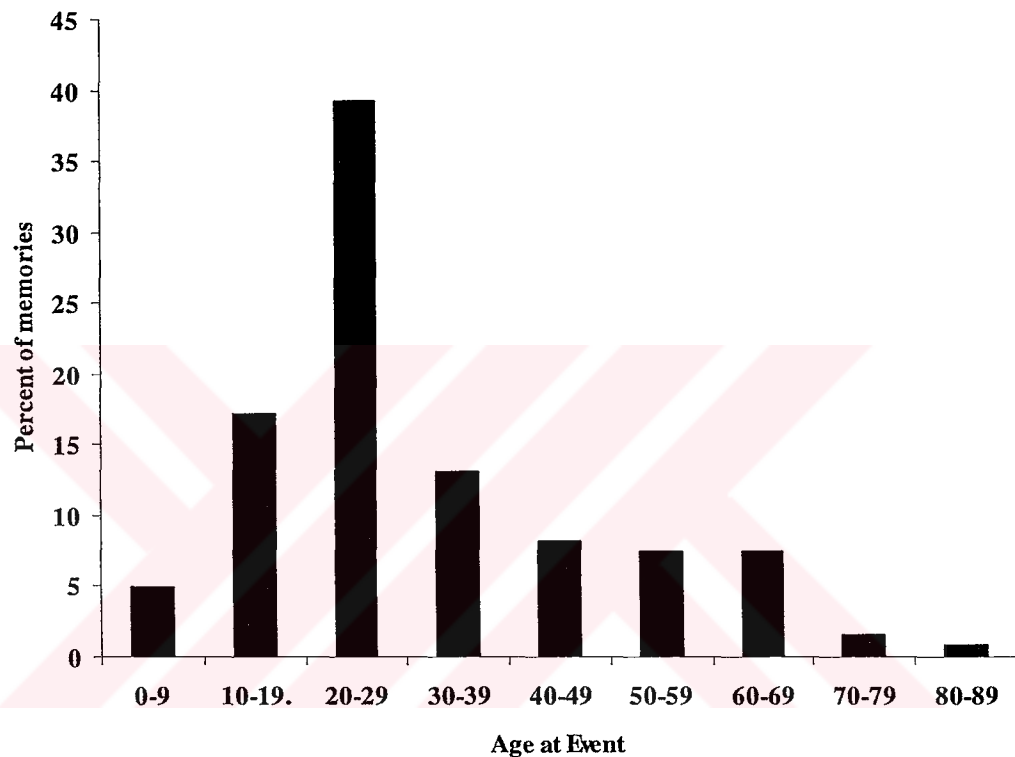


Figure 7 Distribution of free recall flashbulb memories across the lifespan

The apparent result was that there is a clear reminiscence bump for the free recall of flashbulb memories. Interestingly, there were more memories from the 20-to-29 age decade when compared to autobiographical events which had a peak at 10-to-19 age decade. An additional finding is that there were fewer percentage of memories from the 0-to-9 age decade compared to regular autobiographical memories. The minimum age at event reported by the participants was 7.

The distribution pattern of the memories selected by the participants as being their five flashbulb events across different age groups is shown in Figure 8

below. Both 50-59 and 60-69 age groups had a sharper and narrower bump centralized around 20-29-age decade (65% of the 50-59 group, and 54% for the 60-69 group). 70-79 and 80-93 age groups had a broader bump starting from approximately 10 years of age and ending at 28. Recency effects were observed for the 50- and 60- year old participants. A general conclusion from these observations is that across different age groups the lifespan distribution curves yielded a consistent pattern; that is the bump existed for all the groups, whereas much fewer memories were reported from 0-to-9 age decade, and from the decades after 30 years of age.

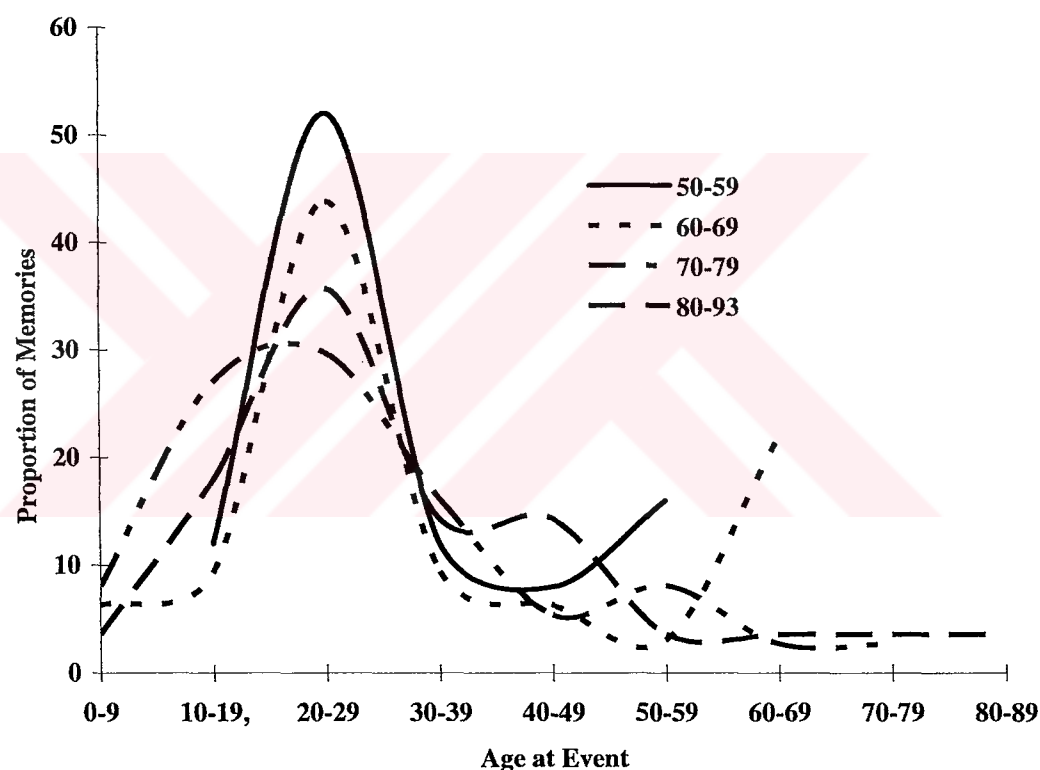


Figure 8. Distributions of free recall memories across age-at-retrieval groups

In the studies that were reviewed in the introduction the bump was defined as an increase in memories from between 10-to-29 as compared to surrounding periods. For statistical comparisons, we contrasted the proportion of events reported from participants' 10-to-29 age period with adjacent age periods ($F(1, 35) = 24.19, p < .10, \text{MSE} = 1.44$). Significant differences were found. The 10-to-29-age period

possessed significantly more memories compared to 0-9 age period and 30-49 age period.

3.2.2. Personal significance of Free Recall Flashbulb Memories

Although not directly asked during the procedure, interesting series of findings to note were that people attributed personal relation or significance to the public events they recalled, such as having a relative or significant other participating in the event, or close political ties to the protagonists of the event. In that respect, 31.8% of the reported events were personally significant. However, this analysis should be approached with caution in that this personal “distance” to the event was not asked directly in the instructions, but deducted from the reports of the participants. In the younger group 36.2% of the events provided personal connection. Two highly frequent events (*Cyprus and Korean War*) in the younger group, for example have high personal significance. 90% of the participants mentioning Cyprus event, and 95% of the participants mentioning Korean War had a significant other and/or themselves participating in these military activities. The percentage of events having personal significance was relatively low in the older group (26.8%).

Another interesting finding is that 47.2% of the events with personal significance were from 20-to-29 age decade. Figure 9 below displays the proportion of events with personal significance as they occurred in their life spans. The specific events from when the participants had been 20 to 29 years were *1960 Revolution*, *Cyprus event*, *6/7 September*, *Execution of Menderes* and *Execution of Deniz Gezmiş and Friends*, and finally *DP's becoming the ruling party*.

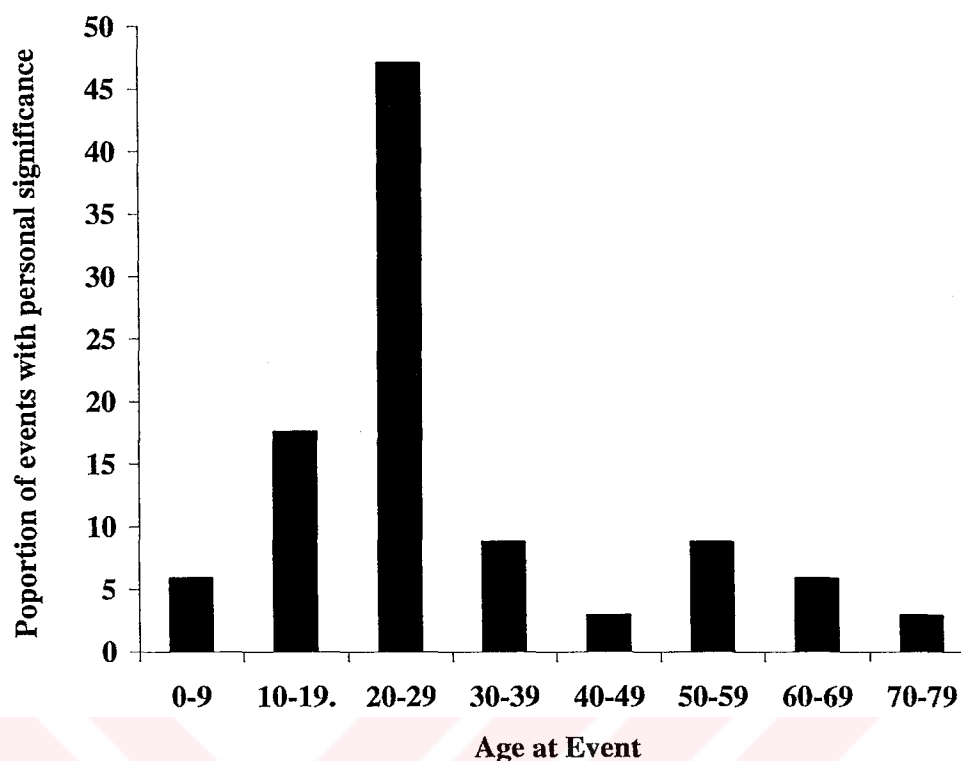


Figure 9. Distribution of free recall FBMs with personal significance

3.2.3. Free Recall Flashbulb Memory Ratings

In the previous section, in parallel with the findings from autobiographical memories we have found a reminiscence effect for the events that the participants themselves provided without any specific cue or time restriction in the instructions. The reminiscence bump was much narrower in the younger population. In order to examine whether there were also qualitative differences between the free recall flashbulb events coming from different decades of lifespan and the reminiscence bump period, several analyses of ratings were conducted.

Table 8

Mean Ratings of Free Recall Memories by Life Period

Subjective Quality	Life Period					
	<u>Early Life (0-9)</u>		<u>Bump Period (10-29)</u>		<u>Mid/Late Life (30-49)</u>	
	M	SD	M	SD	M	SD
Vividness	4.33	0.81	4.72	0.51	4.59	0.68
Significance Then	4.83	0.40	4.88	0.37	4.85	0.42
Significance Now	4.67	0.81	3.69	1.12	4.20	0.95
Surprisingness of the Event	4.17	1.16	4.32	0.86	4.23	0.82
Routineness of the activity at event	1.67	1.21	2.59	1.46	2.14	1.44
Emotionality	4.83	0.40	4.78	0.63	4.71	0.6
Talked about then	2.83	0.40	2.69	0.62	2.76	0.56
Talked about now	1.67	0.51	1.21	0.53	1.54	0.78

Note: All ratings are on 5-point scales where 1 = low and 5 = high; except for the last two ratings are on 3-point scales.

Table 8 above gives the means and standard deviations of the ratings for free recall memories across different periods of the lifespan. Separate ANOVAs for none of the ratings, revealed significant differences among the three periods of the lifespan. (vividness $F(2,8) = 1.53, p > .10$, MSE = 0.6; emotionality $F(2,8) = 0.00, p > .10$, MSE = 0.00; surprisingness $F(2,4) = 0.5, p > .10$, MSE = 0.33; significance then $F(2, 8) = 0.00, p > .10$, MSE = 0.00, significance now $F(2,8) = 2.93, p > .10$, MSE = 2.40; frequency of talk $F(2,8) = 1.18, p > .10$, MSE = 1.66).

In order to see the distribution of phenomenological qualities more clearly, Figure 9, below, presents the lifespan distribution patterns of the distribution of highest rating scores.

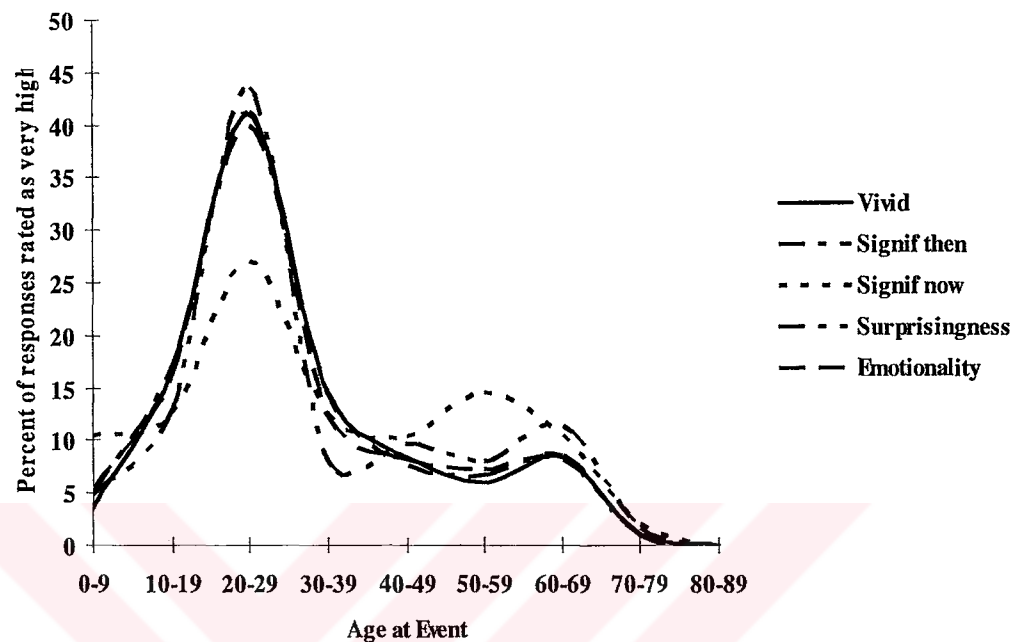


Figure 10. Distribution of free recall FBMs rated as “very high”

Similar to the findings with regular autobiographical memories, memories which were rated as very high on vividness, significance, emotionality and surprisingness predicted the reminiscence effect.

3.2.4. Phenomenological Characteristics of Free Recall Flashbulb Memories

Remember/know judgments and vantage point judgments were examined in terms of their distribution across lifespan.

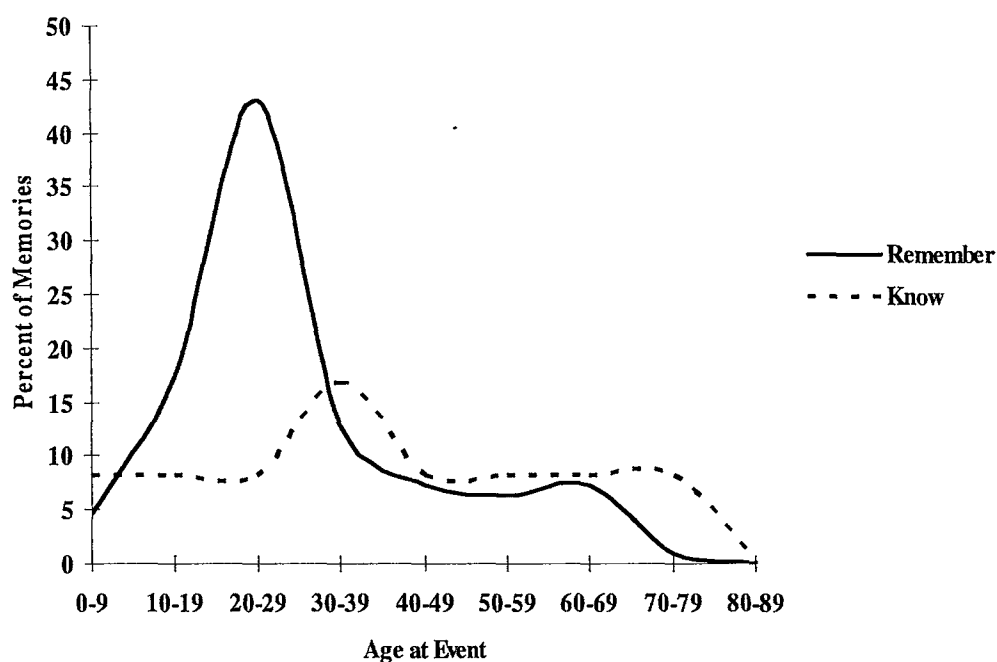


Figure 11. Distribution of R/K free recall flashbulb memories

On the whole, participants provided more remember memories (90.2 %) than know memories (9.8 %) during retrieving free recall flashbulb events. Remember memories came from all decades of lifespan, and diminished at 70 years of age, pointing to an age effect in the formation of flashbulb memories. Remember memories tended to peak at 20-to-29 age decade. It is of importance to interpret these findings with caution. Since the participants were instructed to categorize each of their memories as either Remember or Know, distribution of these categories were dependent on each other and they add up to 100.

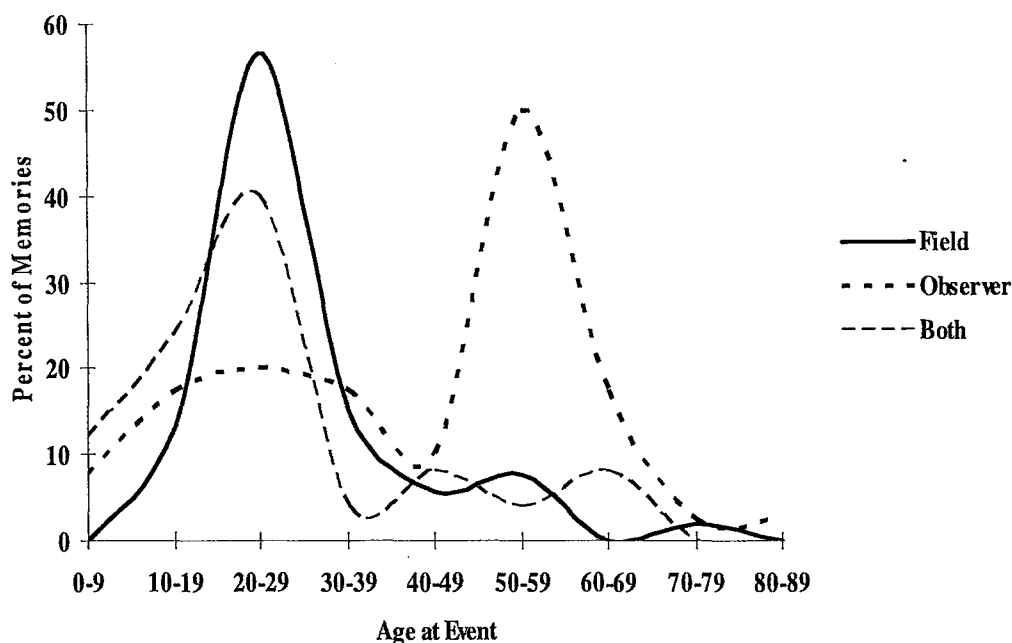


Figure 12. Distribution of F/O free recall flashbulb memories

From the whole data there were comparably number of observer memories (44.2 %) and field memories (34.2%). Field memories tended to peak at 20-to-29 age period, whereas observer memories peaked at 50-to-59 age period. Moreover, free recall flashbulb memories that contained both of the perspectives also tended to peak at 20-to-29 age decade. These data should also be interpreted with caution such that classification of these categories (field/observer) were dependent on each other, participants were required to classify their memories as either one of them.

In sum, findings from the second section revealed that there was a range of variation of variation among the flashbulb events recalled by participants. General trend was that public events that were frequently mentioned did not reveal high flashbulb memory scores. Reported free recall private events outnumbered the public events in frequency, and they had higher flashbulb memory scores compared to public events recalled by the participants. Free recall flashbulb events peaked at 20-to-29 age period, there were lesser memories from the childhood years and last decade of life. This pattern was consistent among various age groups. There were no

qualitative differences observed in any of the ratings, e.g. vividness, emotionality, significance, and surprisingness. With regard to phenomenological retrieval characteristics, Remember responses dominated all the age periods, with an exception in the 70- and over age period. There were no field memories from the 0- to-9 age period, whereas field memories peaked at 10-29 age period. A considerable proportion of free recall flashbulb memories were retrieved from a point including both of the field and observer perspectives.

3.3. Probed Flashbulb Memories

Along with the free recall procedure, we also required probed flashbulb memories from the participants. Previous studies that compared regular autobiographical memories with flashbulb memories generally defined flashbulb memories as vivid private or public memories. This section deals with memories of personal context upon hearing the news of private and public events, as originally formulated by Brown and Kulik (1977). This section deals with the flashbulb scores of nine events and their mean scores. Table 9 below presents the means and standard deviations of the nine probe events for the younger and older participants respectively. Only 6 events were applicable for the younger participants.

Table 9

Flashbulb memory score means and standard deviations by age group

<u>Younger Group (50-68)</u>		
EVENT	Mean FBM Scores	SD
1960 Revolution (1960)	8.83	2.29
Assassination attempt on Özal (1988)	7.94	1.87
6/7 September (1955)	7.50	1.91
Attacks on WTC (2000)	7.15	2.46
Death of Özal (1993)	5.60	3.47
Death of İnönü (1973)	5.00	2.94
<u>Older Group (69-93)</u>		
EVENT	Mean FBM Scores	SD
Death of Atatürk (1938)	9.39	1.24
6/7 September (1955)	7.62	2.98
1960 Revolution (1960)	6.71	3.05
Refah Disaster (1941)	5.40	4.33
Attacks on WTC (2000)	3.35	1.27
Assasination attempt on Ozal (1988)	3.20	2.71
Death of Özal (1993)	2.50	2.25
Death of İnönü (1973)	2.50	2.43
Lotus Disaster (1926)	0.00	0.00

All of the events, except for the Death of the first president of Turkey, Atatürk, were below 9 points, which was determined to be the cut-off point for being

considered to have a flashbulb memory quality for that event in the earlier studies in the literature (Cohen, Conway, & Maylor, 1994, Tekcan & Peynircioğlu, 2002). The events which have the first, second and third highest scores are respectively, *1960 Revolution, Assassination attempt on 8th president of Turkey*, and *6/7 September-attacks on Rums living in Turkey*, for the younger participants. The events which have the first, second and third highest scores for the older participants are, respectively, the *death of Atatürk, 1960 Revolution*, and *6/7 September-Attacks on Rums living in Turkey*.

As seen from Table 9 the general trend is that older participants' mean flashbulb memory scores were lower than younger participants.

3.3.1. Distribution of Probed Flashbulb Memory Scores

The purpose of this third section was to test whether the pattern found in regular autobiographical memories and free recall flashbulb memories would stand for regular flashbulb memories. More specifically, lifespan distribution of recall of specific personal context details regarding surprising and consequential public events was explored. The motivation was to conduct a balanced sampling of flashbulb events for a Turkish sample from different decades.

Below are the figures that show separate analyses for the events that had the highest flashbulb memory scores in terms of their distribution across the lifespan.

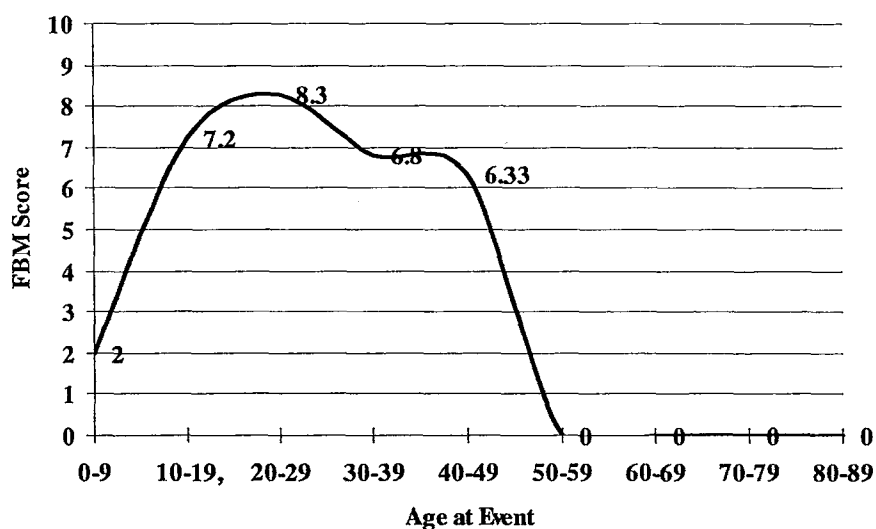


Figure 13. Distribution of mean FBM scores for *1960 Revolution* (N=29)

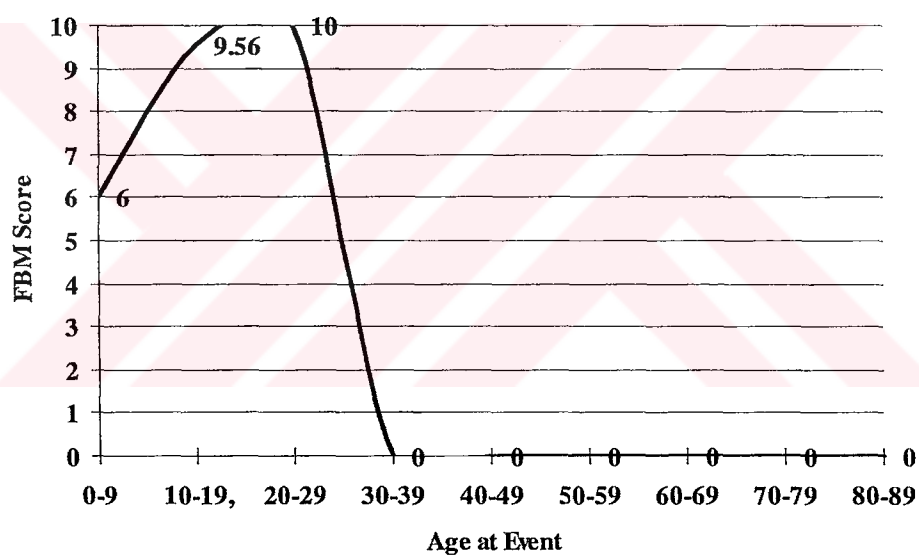


Figure 14. Distribution of mean FBM scores for *Death of Ataturk* (N=18)

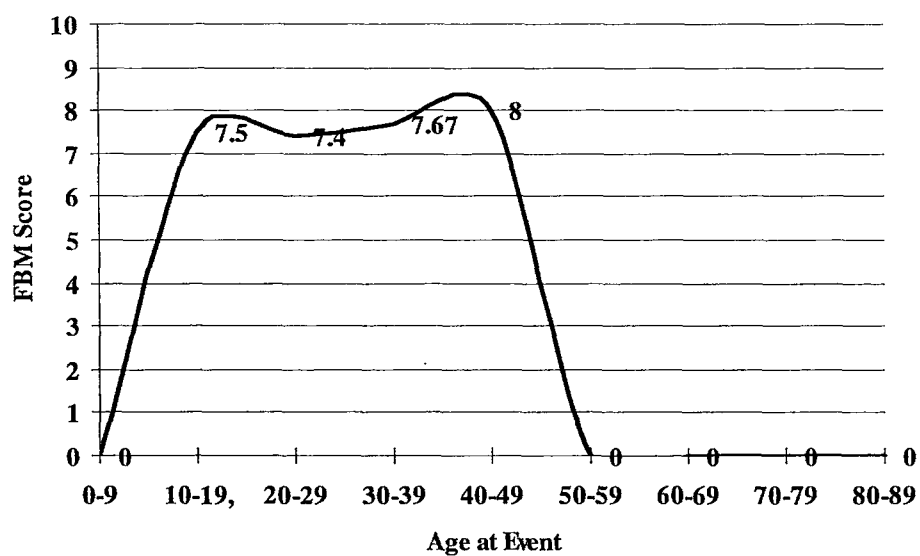


Figure 15. Distribution of mean FBM scores for 6/7 September (N=17)

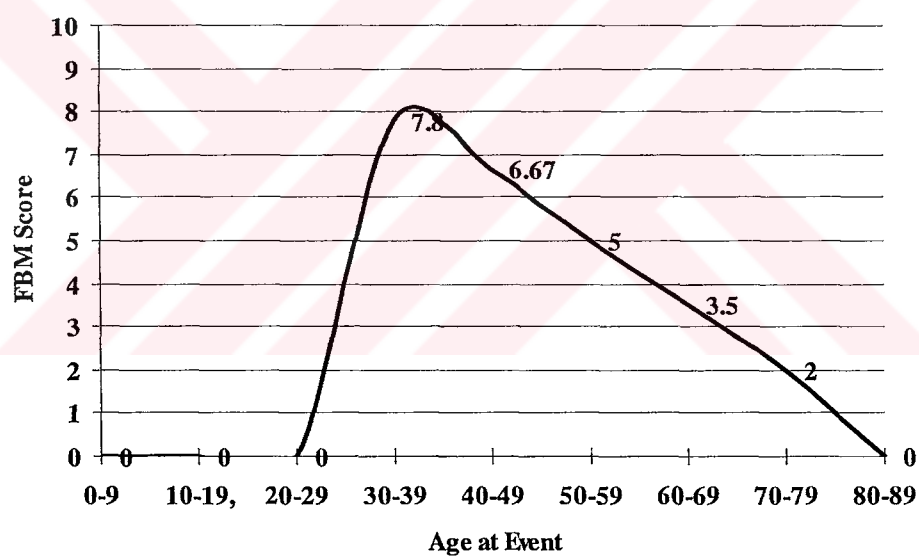


Figure 16. Distribution of mean FBM scores for assassination Ozal (N=24)

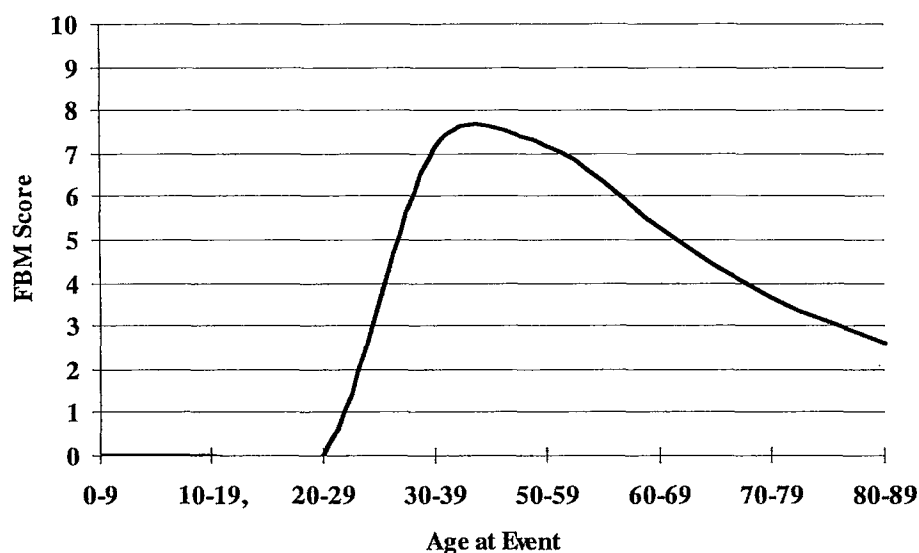


Figure 17. Distribution of mean FBM scores for *11 September* (N =33)

“Assassination attempt on Ozal” and “attacks at World Trade Center” items were the only events that allow us to see the developmental trend from childhood years to old age because there were participants who were 70-79 and 80-89 years old when these events had occurred. The data on these items revealed that recall of personal context details for a public news item diminished with age. In other words, there is a tendency for the older participants of recalling lower amounts of detail. “Death of Atatürk” and “1960 revolution” items should be approached with caution, for there were only three time periods in the former, and five time periods in the latter. 1960 evolution peaked at 20-29 age period, whereas 10-19, 20-29 and 30-39 age periods did not differ in terms of the mean FBM scores for the “attacks at Rums –6/7 September”.

In order to see how the life span retrieval curves for all events looked like, a lifespan distribution curve of mean flashbulb memory scores was plotted for only those participants who had lived long enough to witness all the events that were asked, that is who were over 65 years old at the time of retrieval, we spotted ages at

the time of the event for the mean flashbulb memory scores. The resulting curve seemed very much like that of the autobiographical memories and free recall memories yielded, as the memories got older, the scores on canonical questions diminished. Figure 18 below shows that the highest scores on the canonical flashbulb memory scores were from when the participants were 10 and 19 years old. Moreover, the highest flashbulb memory scores were distributed over the first three decades of life (0-29)

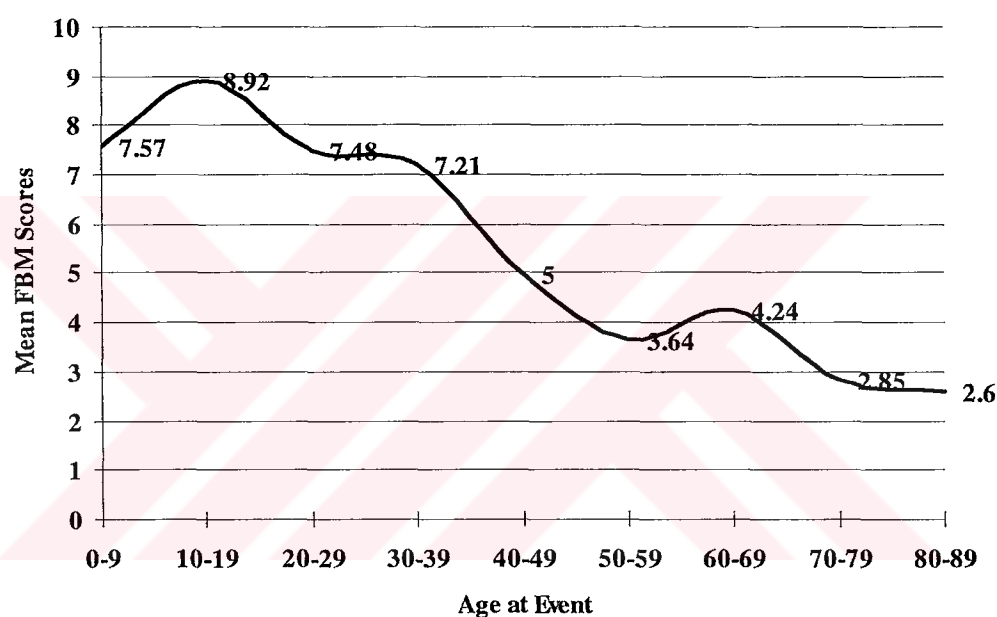


Figure 18. Mean FBM Scores for all events (N = 120)

3.3.2. Distribution of Probed Flashbulb Memories

When proportions of participants who scored 8, 9 and 10 were used as a measure of flashbulb memory performance, the presence of the bumps for Death of Ataturk, 6/7 September, and 1960 revolution could be seen more clearly.

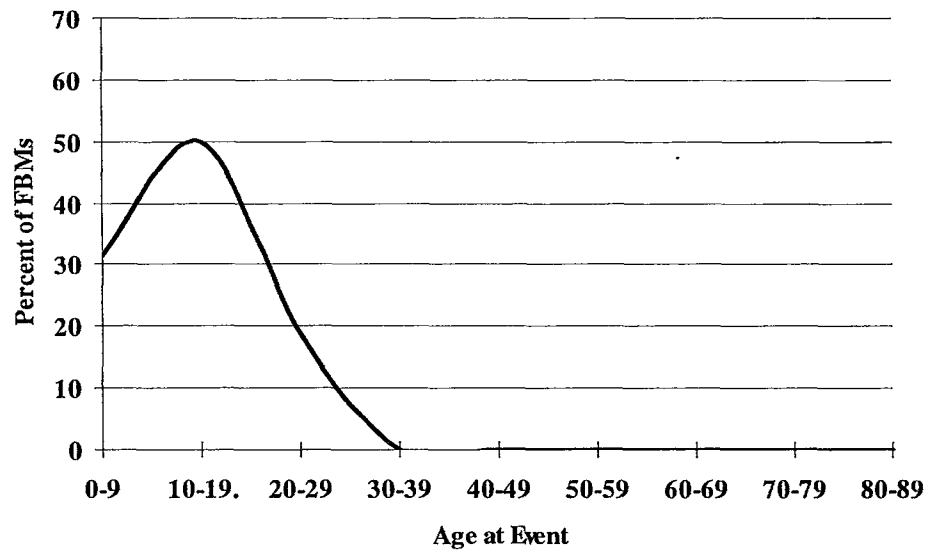


Figure 19. Distribution of probed flashbulb memories for Death of Ataturk

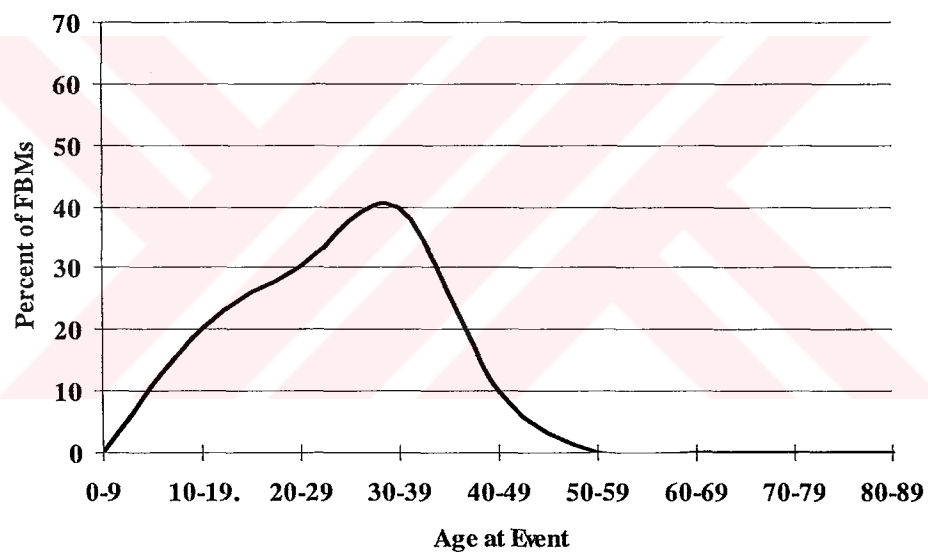


Figure 20. Distribution of probed flashbulb memories for 6/7 September

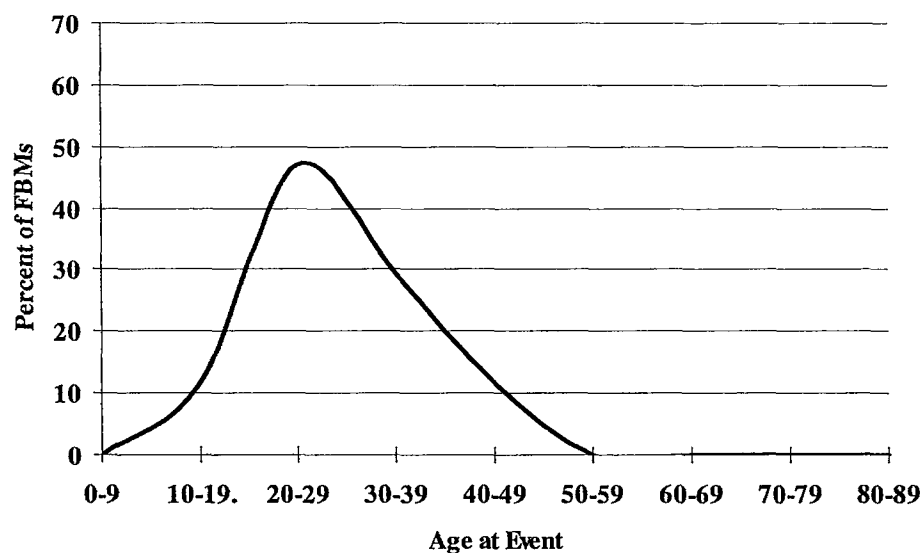


Figure 21. Distribution of probed flashbulb memories for 1960 Revolution

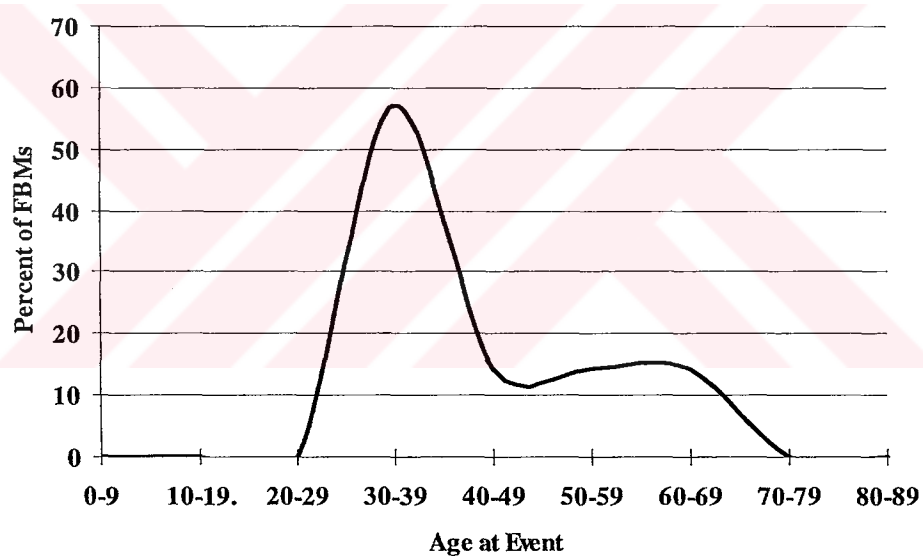


Figure 22. Distribution of probed flashbulb memories for assassination Osal

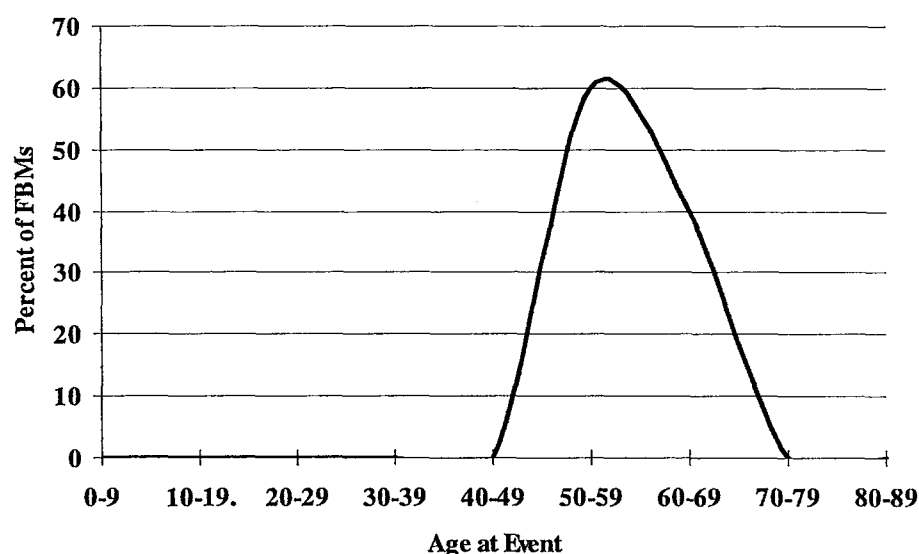


Figure 23. Distribution of probed flashbulb memories for 11 September

Reminiscence bumps were found during when the participants were 20-to-29 years old for *6/7 September* and *1960 Revolution*. For the *death of Atatürk* item the distribution peaked at 10-19 age period. For the *assassination attempt on Özal* item the distribution peaked at 30-39 age period, and for the *attacks on World Trade Center* the bump was at 50-to-59 age period.

Another aim of the present study was to construct an index of the flashbulb events for the Turkish population. Some of the events which we asked as probes in the flashbulb memory section –Section 3- appeared as free recall flashbulb events in the second section. These were, as mentioned before, *1960 revolution*, *death of Atatürk* and *6/7 September*, with flashbulb scores 8.3, 7.8, and 6.3 respectively. However, none of the other events asked in the probed flashbulb memory section was mentioned in the free recall section.

In sum, the present section displayed a general trend that the events used as probes did not yield high flashbulb memory scores. The highest two events in terms of flashbulb memory scores were *Death of Atatürk* and *1960 Revolution*. Distribution

patterns of these two events were in parallel with the expected pattern. When the participants aged over 65 years old who should have witnessed all the events were considered, the resulting pattern indicated that the highest scores came from when the participants were 10-to-29 years old.

3.4. Comparison of Autobiographical and Flashbulb Memory Distributions

A major aim of the present study was a direct comparison of the recall of the autobiographical events with recall of flashbulb events across the lifespan. In the previous sections, analyses revealed that flashbulb memories are influenced by age at event, especially with reference to the reminiscence effect, the same way as normal autobiographical memories. Earlier attempts of direct comparisons of the same sort in the literature indicated that the reminiscence bump occurs later in public or vivid memories (e.g. Rubin and Schulkind, 1997; Howes and Katz, 1992) as compared to autobiographical memories. In the present section detailed comparisons of age effects on the distributions of the two kinds of memories were conducted.

In the previous sections percentages of autobiographical and free recall flashbulb memories were plotted across the lifespan separately. Figure 24 below shows the distribution of free recall and autobiographical memories on the same plot to allow detailed comparisons.

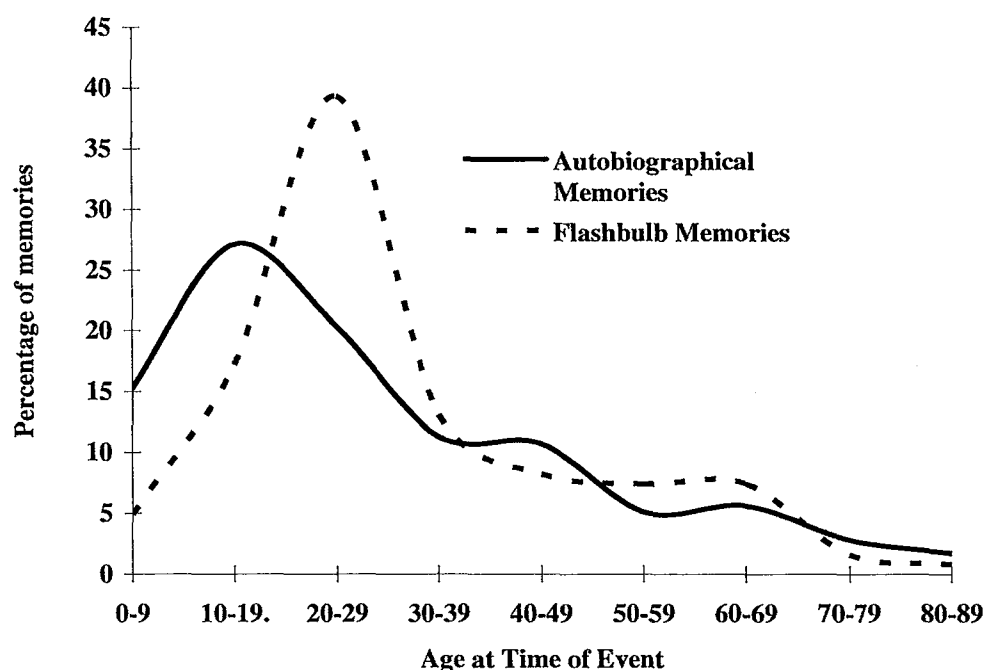


Figure 24. Autobiographical and Free Recall Flashbulb events across lifespan

The two distributions are almost equal in shape, except for bump with free recall flashbulb memories occurred at 20-to-29 age period, whereas the bump for the autobiographical memories occurred at 10-to-19 age decade. Another important thing to note is the presence of a small bump at 50-to-69 age decade with flashbulb memories. Implications of these findings will be discussed at the last section.

Repeated-measures ANOVA was conducted whether there were more memories at 10-29 bump period for free recall memories as compared to autobiographical memories. The proportion of autobiographical memories and free recall flashbulb memories were contrasted and it was found that in the bump period there were significantly more memories for free recall memories than autobiographical memories ($F(1,32) = 3.94, p < .05, MSE = .146$). Another ANOVA was conducted to see if there were more free recall memories at 50-to-59 age period. The proportion of memories in that age decade was not significantly higher than autobiographical memories.

The same comparison plots were conducted for each age at retrieval group separately as shown in Figures 25, 26, 27, and 28. For 50-year old participants free recall flashbulb memories had a clear bump at 20-to-29 age decade, and there was a small reminiscence effect. Autobiographical memories, on the other hand, had a broader bump during 10-to-29 age decade, and a recency effect during the last decade of their life (40-to-49 age decade). Interesting finding was that participants did not recall any free recall flashbulb memories from the first decade of their life for 50-year old participants.

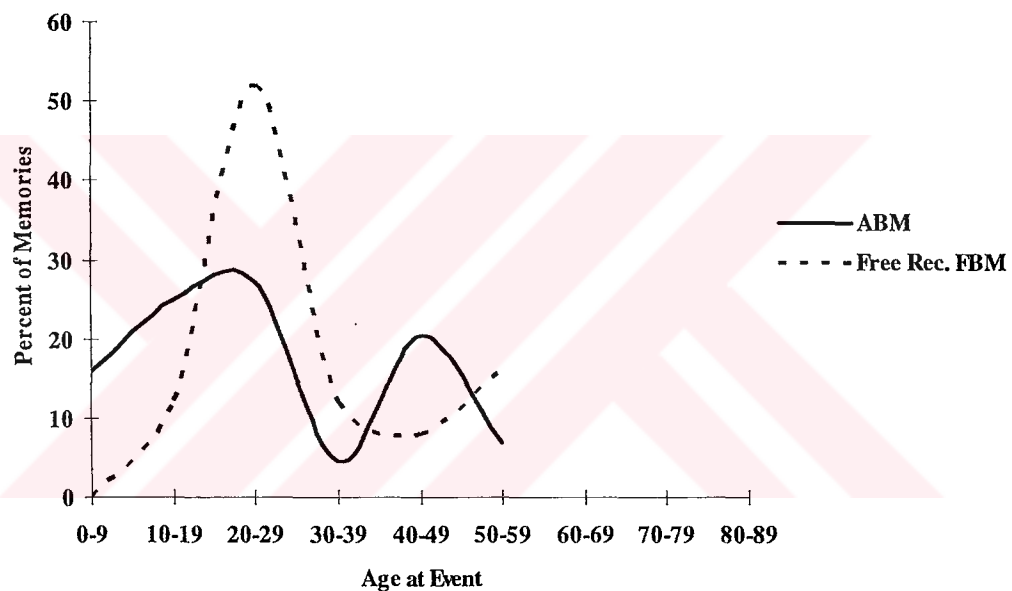


Figure 25. Autobiographical and Free Recall Flashbulb Events for 50-59 year olds

For the 60-year old participants autobiographical memories peaked at 10-to-19 age decade, whereas free recall flashbulb memories peaked at 20-to-29 age decade. Recency effects were more pronounced for both types of memories during the last decades of the participants' lives.

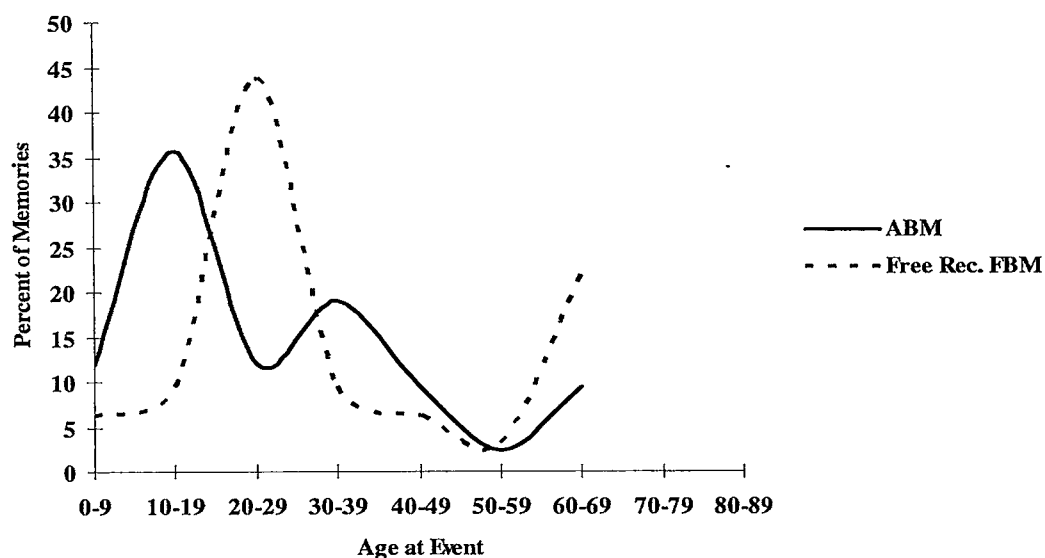


Figure 26. Autobiographical and Free Recall Flashbulb Events for 60-69 year olds.

For the 70-year old participants the distributions of the two types of memories resembled each other regarding the place of the bump and the rest of the curve.

While autobiographical memories peaked at 10-to-19 age decade, free recall memories tended to peak at 20-to-29 age decade with a broader bump compared to autobiographical memories.

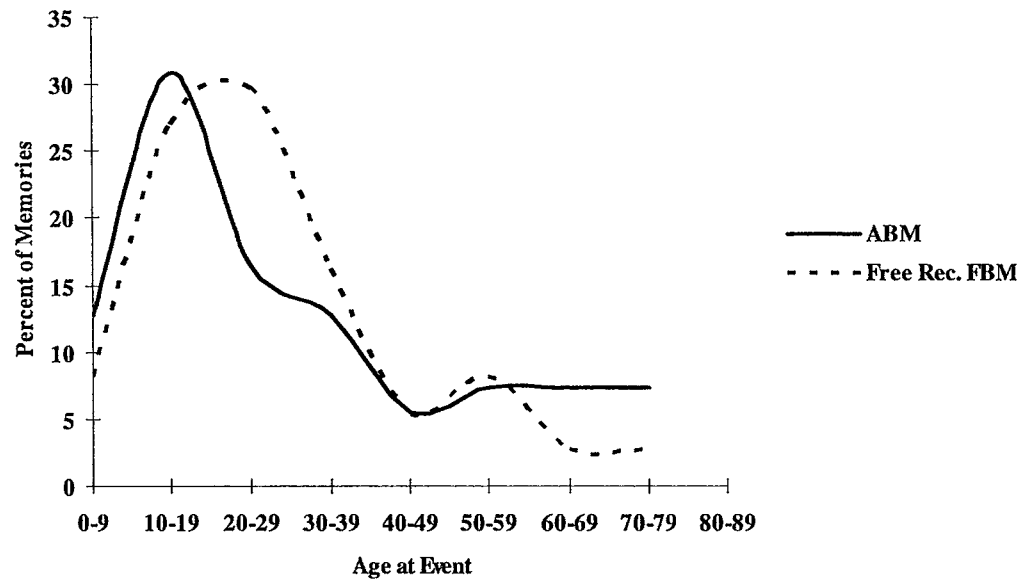


Figure 27. Autobiographical and Free Recall Flashbulb Events for 70-79 year olds

Finally, for the 80- year old participants both types of the memories tended to peak at 20-to-29 age decade. Participants reported more autobiographical memories from childhood compared o free recall flashbulb memories.

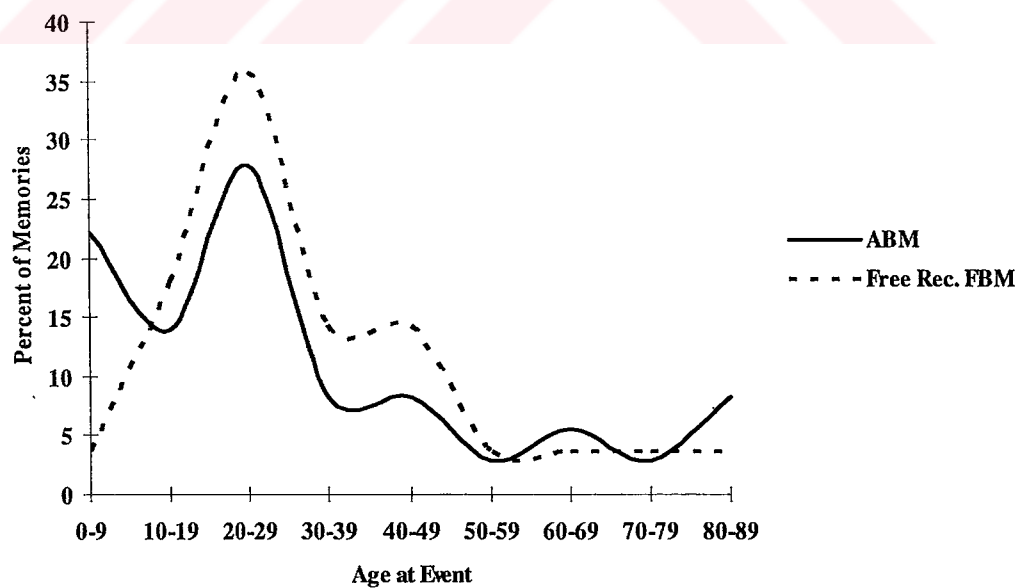


Figure 28. Autobiographical and Free Recall Flashbulb Events for 80-93 year olds

When childhood memories were analyzed with respect to age, the data indicated that autobiographical memories were scattered from 2 years old until 9 years old, with a peak at 7 and half years of age. On the other hand, the youngest free recall flashbulb event that the participants recalled was from 7 years old in the 0-to-9 age decade.

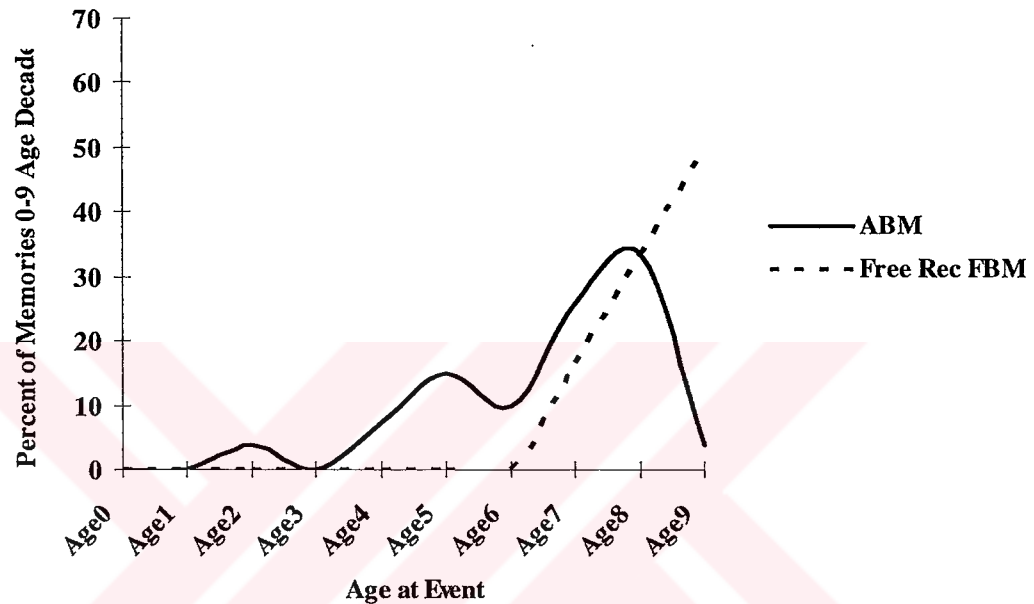


Figure 29. Percentage of memories from 0-to-9 age decade

3.4.1. Phenomenological Characteristics Compared

Another issue to be investigated is whether two types of memories were qualitatively different from each other from a developmental perspective. Previous studies indicated that vivid memories were higher in all the qualitative aspects compared to regular autobiographical memories (Rubin & Schulkind, 1997). Independent of the age of participants at the time of event, separate ANOVAs showed the differences in various ratings. An ANOVA on the vividness ratings showed significant differences between free recall memories and autobiographical memories, with free recall having higher vividness ratings ($F(1, 91) = 21.14, p < .05, MSE = 11.5$). Similarly, during all decades, free recall events were rated as more

significant at the time of event compared to autobiographical events ($F(1,95) = 87.47, p < .05, \text{MSE} = 37.63$). Current evaluations on the significance of the event by the participants differed significantly, free recall memories being rated as consistently higher ($F(1, 96) = 12.04, p < .05, \text{MSE} = 16.16$). Free recall flashbulb memories were also discussed more frequently than autobiographical memories ($F(1,86) = 24.87, p < .05, \text{MSE} = 13.79$).

In conclusion, findings from the present section revealed that flashbulb memories peaked at a later point in time (20-to-30 age period) compared to word-cued autobiographical memories. There were a lesser amount of childhood memories with free recall flashbulb memories, and the minimum age that the memories were reported from was 7 years old with free recall and 2 years old with autobiographical memories. Moreover, free recall flashbulb memories were rated as higher in all of the domains (vividness, significance of the event, etc.) than word-cued autobiographical memories.

4. DISCUSSION

The present study replicated the previous findings in the literature with cued recall specific autobiographical memories with a Turkish sample. The life span distribution curve seems to possess clear childhood amnesia and reminiscence bump components, occurring during when the participants were 10-to-20 years of age. The present study also proposes that flashbulb memories are recollected in the same way in terms of the shape of the distribution as regular autobiographical memories, involving the same components.

Furthermore, grouping participants into four age groups representing middle through old age (i.e. 50-, 60-, 70-, and 80 and over- year olds) demonstrated the same phenomenon consistently for all of them, which implies that this pattern is not influenced by age-at-retrieval. Thus, our findings replicate other studies in the literature on cued and vivid memories that describe the reminiscence bump with different methodologies.

However, our findings revealed that reminiscence bump for free recall flashbulb memories occurred later than the bump for autobiographical memories. Free recall and probed recall flashbulb memories peaked during the period when participants were approximately 20-to-30 years whereas recall of autobiographical memories tended to peak during the period when participants were approximately 10-to-20 years of age.

Moreover, the drop between the proportion of memories from the bump period and the proportion of memories from the adjacent periods (30-39 and 0-9) was sharper with flashbulb memories compared to regular autobiographical memories. Autobiographical memories had a shallower bump. In other words, with free recall flashbulb memories people recalled much more memories from the bump period.

This finding is in accordance with Fitzgerald (1996) who found a clear bump with a sudden drop in the number of memories after 25 years of age with vivid memories. Fitzgerald accounted these findings with the level of education. As the education level increases, people tend to recall more memories from their young adolescence and early adulthood. Participants of the present study also had high levels of education. Out of thirty-six participants, twenty of them had a college degree or above. Given that the free recall flashbulb memories reported by the participants were very high in vividness compared to autobiographical memories, level of education as proposed by Fitzgerald (1996) could account for the sudden drop at the end of the bump period with free recall flashbulb memories, and, thus, can partially explain the shift in place of the bumps between flashbulb and autobiographical memories.

Similarly, plots of important/vivid and word-cued memories in Rubin and Schulkind's (1997) study differed in the bump period. Important memories peaked at 20-to-30 age decades, but not for the 10-to-20 period. Rubin and Schulkind regarded this finding as a methodological issue and asserted that different studies and/or methodologies produced different distributions of memories, especially in the bump period. However, recent findings on age and flashbulb memories indicate that such a shift of the bump, is a function of the type of memory that is searched for, not a methodological issue per se. Recently, Tekcan and Demir (2002) asked the subjects their memories for several public events and found out that reminiscence bump for flashbulb events occurred later in the lifespan, exactly in the 20-to-30 age period, similar to the present findings.

The fact that there is a temporal shift in the reminiscence bump for flashbulb events was also supported by the probed flashbulb memory section which dealt with

memories for personal context upon hearing public events given as probes.

Reminiscence bump for these events seem to occur later (20-29) than the bump for autobiographical memories. The findings revealed that for some news items such as 1960 Revolution which had the highest flashbulb memory scores there is a clear reminiscence bump occurring at 20-29 age period.

These results are in contradiction with Holmes and Conway (1999) who conducted a study in which they asked the participants to recall both private and public items of news they considered to be important. It was found that peak recall for public items of news was in the period when people were aged 10-to-19 years whereas peak recall of private items of news occurred in the period when the participants were aged 20-to-29 years. They explained these findings with development of Eriksonian psychosocial stages; more specifically, the formation of a 'generational identity' earlier than the development of an 'internal identity'. Generational identity refers to individual's recognition that he/she is part of a particular social subgroup, with which he shares common goals, knowledge and memories of similar kinds of experiences, and in trying to identify him/herself with the group, the individual experiences cognitive effort that leads to privileged encoding of knowledge into memory and more advantaged retention of public knowledge and memory during this period. Internal identity, on the other hand, refers to themes more related to self, such as romantic relationships and marriage which occur at a later period of the lifespan, and thus memories for these self-related themes comes from later age period (20-to-29). Given the limits of the sample size and lack of socio-emotional control variables, the present data can not claim a new formulation of psychosocial development. A rather moderate proposal would include a later development of public awareness. Flashbulb memories, by definition, require

awareness of public issues and attributing levels of significance to them. Participants in the present study reported more public or political flashbulb memories from their early adulthood (20-29). It can be asserted that flashbulb events are involved in one's initial understanding of public and political domains in the early adulthood period. On the other hand, regular autobiographical memories, as implied by the present data, come generally from late adolescence (10-19) and are lower in ratings of significance than flashbulb memories. Moreover, closer examinations on the data revealed that none of the events reported in the word-cued autobiographical memory section were related to public events. Thus, the present study proposes that the difference in the location of the bump might be due to differential developments of private and public awareness of the individuals.

4.1. Childhood Memories

Word cued autobiographical and free recall flashbulb memories differed also with regard to memories from childhood. Mullen (1994, as cited in Rubin, 2002) asserted that the childhood amnesia component is affected by culture. Thus, the present study provided insights about this component with Turkish culture. First of all, participants reported a higher proportion of childhood memories with word-cued memories compared to free recall memories. Earliest memories came as early as two years of age with autobiographical memories, whereas with free recall flashbulb memories the earliest memories are from seven years of age. A closer examination of the content areas of those memories revealed that autobiographical memories from 2-to-9 age period included traumatic experiences and dramatic events. With free recall memories the most frequent event from 7-to-9 age period was *Meeting with the first president of Turkey, Ataturk*. An interesting observation to note is that the earliest flashbulb memory reported by the participants was a personal experience, not a

public event. This finding is quite consistent with Schumann and Scott (1981) who also reported that visually dramatic events are likely to imprint a younger age group. As reviewed before Winograd and Killinger (1978) reported that children who had been 5 years and over recalled more contextual details of flashbulb events when compared with children 4 years and younger. Similarly, Neisser (1993) found that adults' memories personally significant events from childhood (birth of a sibling, death of a relative, etc.) increase with age at encoding, pointing towards a developmental change in recalling personal context details, such as source of the information. An interesting observation is that the earliest reported flashbulb memory by the participants is

Similarly, with probed flashbulb memories, none of the participants has flashbulb scores 8 or over during the 0-9 age period. Moderate scores exist in that age decade only for the *Death of Ataturk* item. The lack of flashbulb memories in the earliest decade of life, as generally explained by researchers, points to a systematic age gradient in the formation of flashbulb memories. However, this event should be interpreted with caution since it is limited to only three time periods, and the age of the respondents having relatively higher flashbulb memory scores for this event are between 7 and 9 in this decade. Winograd and Killinger (1977) in a similar study found out that only 5 year old subjects had flashbulb memories for JFK assassination, and they reasoned that older subjects would have been at school when the news was announced and it might have been the interruption of the school routine that facilitated the formation of a distinctive memory. A similar mechanism for the *death of Ataturk* event may be playing a role in the findings of the present study, given the accounts of the participants involving the formal school routines.

4.2. Memories from the last decade of life

For word-cued memories and free recall flashbulb memories, there are a lesser proportion of memories from the last decade of life when all age groups are considered compared to the earlier findings in the literature (Rubin et al., 1986, Rubin and Schulkind, 1997).

Recency component on the other hand was more clearly observed when the distributions were plotted by different age-at-retrieval groups separately for free recall flashbulb and autobiographical memories. Participants recalled more memories from the most recent decade of their lives than the previous adjacent decade, but not from the other decades.

A closer look at the content of the memories revealed that recent events reported in the free recall flashbulb memory section generally were not public events, but they were private events. Similarly, with probed recall of flashbulb events section where probes were public events provided by the experimenter, almost none of the participants seemed to possess flashbulb memory score 7 and/or over during when they were over 60 and over years old. The strongest of the possible explanations from the literature is that older people over 60 and 70 years experience an age related deficit in the formation of flashbulb memories. Similarly, Yarmey and Bull (1977), Conway, Cohen and Maylor (1994), and Tekcan and Peynircioglu (2002) found evidence to suggest that subjects over the age of 55 years had fewer flashbulb memories than younger subjects.

4.3. Cue Word Effects

The present study was the first systematical study in using cue words to sample memories across the lifespan with a Turkish sample. The findings, as reported before, replicated the previous literature (e.g. Rubin & Schulkind, 1997) in

terms of the shape of the distribution and the place of the bump. Previous studies replicated the reminiscence effect, as indicated by Rubin (2002) by using as many as 900 cue words given to each participant, and as few as 10 cue words. The present demonstrated that the bump is still preserved when much fewer number of cue words, six in the present case, were used. Moreover, analyses of cue word effects yielded that the type of cue word used did not differentiate memories that came from the bump period from other memories.

Rubin (1982) asserted that different cues had different effects; such that concrete, easy-to-image words which usually have objects as referents produce older memories, and abstract and hard-to-image words produced younger memories. The cue words in the present study were more of concrete words, such as ship, soup, chest, etc. Although there is still a considerable proportion of memories from the recent years of life, the reason for reporting of older memories from the 10-19 age period by the participants may have resulted due to the use of concrete words. Future studies in Turkish should replicate this methodology with abstract words in order to see whether there would be any reporting biases in terms of the age of the memories.

4.4. Phenomenological Characteristics

Brewer (1996), in his analysis on classification of types of memory, noted that researchers use phenomenology to distinguish autobiographical memories from other forms of memory. A side purpose of the present study was to provide further evidence on whether flashbulb memories were to be classified a separate form of memory or not. Comparisons among regular autobiographical and free recall flashbulb memories indicated that free recall flashbulb memories were rated as significantly higher than regular autobiographical memories. Since data in the present study was collected from the same participants, this findings may well point

to phenomenological differences, at least in intensity, among autobiographical and flashbulb memories.

4.5. Distribution of Phenomenological Characteristics

In order to further understand the retrieval process, we also examined phenomenological differences between memories from across the lifespan. Previous research (e.g. Rubin and Schulkind, 1997; Fitzgerald, 1996) reported that memories from the bump were not more significant, emotional or vivid compared to other periods of the lifespan. Interestingly, in the present study it was found that memories from the bump period with autobiographical memories were rated as more significant and vivid compared to memories from ages 30 and over, but not statistically higher than the memories from 0-to-9 age. Such a finding points to the need for a more systematic investigation of remote memories which were found to be more vivid, significant and more frequently talked about compared to more recent memories.

With flashbulb memories, on the other hand, ratings of vividness, surprisingness, significance and even emotionality of the memories from 10-to-29 age period were not statistically different from the other periods of the lifespan. How can we explain the findings that, with regular autobiographical memories, qualitative rating distributions predicted reminiscence bump, and not with flashbulb memories? Although not asked directly in the first section, informal content analyses within regular autobiographical memories yielded that reported memories were positive altogether in content or they were currently positively evaluated when recalled. There were few exceptional participants who reported traumatic and sad experiences from their youth. Rubin and Bernstein (2002) proposed that life scripts favoring positive events in young adulthood could account for the bump for there was a preponderance of happy memories in the bump period. Therefore, it could be

concluded that emotionality of the autobiographical memories may cause the qualitative differences between different periods of lifespan. Indirect evidence for such a conclusion comes from Wright (1991) who showed strong correlations between importance/significance of the event and emotionality of the event. Findings of the present study indicated that the reminiscence bump is predicted by the proportion of participants who rates consequentiality/significance very high, as seen in Figure 4. It follows that significant events were quite happy memories, and thus made the memories from the remote past qualitatively distinctive compared to recent word-cued memories.

Flashbulb memories from all the periods of the lifespan, on the other hand, were rated comparatively high. Pillemer (1984) noted that when asking for recall of flashbulb memories lack of qualitative differences between periods of lifespan might have resulted because individuals might think (in retrospect) that these types of events, given their vivid nature, should be evaluated as important. Thus, he concluded, with retrospective ratings one can never be sure whether retrieval itself caused the rating or vice versa. For instance, in the present study, 1960 revolution appeared as a flashbulb event, rated as highly significant, with both probed recall and free recall of flashbulb memories. Although it was rated as highly significant and vivid, there is evidence that reconstructive factors may be playing a role. 91% of the participants reported to recall learning the news “of that important event” from the “though” voice of a popular political figure, Alparslan Turkes, who was then only a military officer unknown to the public. The possibility of recognizing his voice then as Turkes is quite low. It would be possible to conclude that extra importance is attributed to the revolution later and participants reconstructed their memories about the event based on their later knowledge. Neisser (1982) noted that consequentiality

is factor which contributes to the formation of flashbulb memories can change over time, and this may lead to the reconstruction.

On the other hand, Rubin(2003) noted that lack of a difference of qualitative differences among bump memories and memories from other decades of the lifespan may be a sampling problem, that is the first memories that came to mind are most probably the ones that are the highest in imagery, most significant and emotional, therefore makes it difficult to make statistical comparisons in terms of their occurrence in the lifespan.

Other phenomenological retrieval characteristics in the present study that yielded interesting results in relation to age were remember/know judgments and vantage point selections.

Regarding vantage point selection researchers (e.g. Mc Isaac and Eich, 2002) identified age as an influencing variable. In general, it was found out that people tended to see themselves as actors in events of the distant past, that is observer perspective; but re-experienced recent events from something akin to the original perspective, field perspective. Our results suggest that with regular autobiographical memories participants' judgments regarding field perspective were concentrated during 10-to-30 age decade, and dropped at 30-to-49 age decade whereas observer memories peaked at a much later period, at 30-to-49 age decade and continued at a steady level (65%) until the age at event was 70 and over. These findings indicate that bump with auto memories is predicted by field memories, which were defined by Neisser and Nigro (1983) as memories that focus on psychological states, affective reactions of the actor. This finding may also contribute to explain the qualitative rating differences among the bump and postbump periods with word-cued autobiographical memories.

The case is much different with free recall flashbulb memories. No field memories came from 0-9 age period. They have a peak at 10-29 age period and then diminished toward 70-over age period. Interesting finding is that there is a considerable percent (21%) of “both” category that contains both field and observer perspectives in a single memory account. Both memories tended to peak at 10-29 age period, too. These findings makes sense because observer memories are defined to include information about how the subjects looked, what they did or where things were, all of which are personal context details, which directly relates them to flashbulb memories.

Interesting results were reached with remember/know judgments. With autobiographical memories remember responses peaked at 10-to-19 age period, and diminished at 30-to-39 age period, which points to the fact that memories from the bump period are “relived rather than just “known” to happen. Given the finding that there is no significant difference between the proportion of Remember responses between 0-9 age period and 10-29 age period, points to the conclusion that remote memories are relived, whereas recent memories are just known for this specific sample. In other words, following Tulving’s (1985) reasoning episodic memory contributes to remote memories, which is in line with Parkin and Walter (1992, as cited in Rybash, 1999) who stated that older adults know the present but remember the past. Thus, findings of the present study demonstrated that this phenomenological property of autobiographical memories differs over the lifespan. Specifically, the bump peaked at 10to-19 age period for remember memories, whereas at 40to-49 age period for know memories with autobiographical memories. These findings are in sharp contrast with data from Rybash and Monaghan (1999) who found no difference in the shape of the bump between remember and know memories.

With flashbulb memories remember responses dominated all the age periods, as expected given that flashbulb memories are the memories for personal context. However, a considerable proportion of Know responses also existed (10%). What is interesting is that remember responses diminished at age 70 and over, pointing to an aging effect. Specific explanations may include the assertion that flashbulb memories depending on the same cognitive and neural processes as source memory. Johnson, Hashtroudi, and Lindsay (1993) suggested that, by definition, source and flashbulb memories both involve memory for the spatial, temporal or perceptual contexts in which events are experienced. Moreover, in most studies of flashbulb memory, what is of interest is memory for the *reception* of information about the event, when, where, and from whom the event was heard; that is remembering the *source* of the event itself. There are a wide range of studies with older adults that designate disproportional deficits in source memory compared to factual and other types of memories (e.g. Brown, Jones, and Davis, 1995; Ferguson, Hashtroudi, and Johnson, 1992; Spencer and Raz, 1994). Thus, diminishing remember responses after 70 years of age in the present study may well be related to the deficits of source memory, and thus, deficits in the formation of flashbulb memories.

4.6. Contents of the memories

It is of importance for extending the definition flashbulb memories that which kind of memories people prefer to recall more when they were asked to report vivid public and private memories. Holmes and Conway (1999) reported that their subjects reported more private memories compared to public memories. The present study also found that participants from all age groups reported more private memories than public events. Moreover, although for all events, the general trend was considerably high flashbulb memory scores, it was found that private flashbulb events were

reported to have the highest scores. Similarly, Rubin and Kozin (1984) suggested that the majority of flashbulb memories are formed to personally important life-events rather than newsworthy events of national and international importance. Such a conclusion is also supported by the present findings that a good percent of our sample (30%) reported personal ties or connections to the public event they reported, such as having father/brother that was influenced/ or influenced by the event. Wright (1991) proposed emotionality, and therefore, consequentiality of the event as the primary predictor of flashbulb memory formation. Findings of the present study additionally suggest personal significance and/or emotionality-consequentiality as a crucial factor in the long term retention of flashbulb memories over the lifespan, especially given that probed flashbulb memories had much lower scores compared to the free recall flashbulb memory scores in the present study.

Elnick et al. (1999) reported that memories from the bump period were generally from family/relationship or work/education domain and concluded that since these memories reflected intense psychological activity related to self, the results favored a self narrative hypothesis, favoring the retention of self-related memories from late adolescence and early adulthood. Informal content analyses of the free recall flashbulb events in the present study, especially the ones in the bump, did not yield any steadiness of content areas. They were not consistently about family, relationship, or work issues; nor were they always military issues. Several political issues were raised. Thus, it is hard to conclude for a self-narrative approach with regard to contents of the free recall memories within this particular sample.

A rather novel aspect of the present study was to construct an index of flashbulb events for the Turkish population. Some of the events which were asked as probes in the third section appeared as free recall flashbulb events with high FBM

scores in the second section. These were *1960 revolution (1960)*, *death of Atatürk (1938)*, and *6/7 September-attacks on Rum residents in Istanbul (1955)*. Other events that were frequently identified by the participants in the free recall section were *Execution of Menderes*, *a major earthquake (1999)*, *Cyprus military operation*, and *recent terrorist attacks on HSBC Bank in Istanbul*. These events are worthy of consideration, however, they should be interpreted with caution due to the smallness of the sample of participants in the present study.

In conclusion, this study was an attempt to specify the influence of age on memory processes further by comparing regular autobiographical and flashbulb memories in terms of their distribution and phenomenological qualities. This study was the first study in Turkish that systematically used cued recall for sampling of autobiographical memories and findings yielded a clear reminiscence bump and childhood amnesia components as reported by the earlier studies in the literature. Moreover, this study was among the few in the literature that reported qualitative differences between the memories from the bump period and post bump period. Among the several predictors of such a difference may be the emotionality of the memories of the bump memories as the preponderance of field memories, which are characterized as containing affective and psychological states, from the same period suggests.

Since no previous study systematically investigated distribution of flashbulb memories across the lifespan and their phenomenological qualities, the present study used a double measure to assess flashbulb memories over the lifespan; free recall and probed recall of flashbulb memories. Another motivation to use these methods was to construct an index of flashbulb memories across the lifespan. The results yielded that with both of the methods the reminiscence effect was replicated. Free recall flashbulb

memories peaked at 20-to-30 age period, with a fewer proportion of childhood and recent memories compared to word-cued autobiographical memories. Similarly, when all the probe events were considered reminiscence was found to exist. An important thing to note here is that flashbulb memory scores for probed recall section were much lower compared to the events in the free recall section. Moreover, phenomenological characteristics of free recall flashbulb memories do not differ across different periods of lifespan; that is, bump memories were not found to be qualitatively different from memories of other periods, in contrast with autobiographical memories.

The present study compared the two types of memories in two areas, reminiscence bump and childhood amnesia. Results indicated that autobiographical and flashbulb memories tended to peak at different points in time, the former peaked at 10-to-19 age period and the latter at 20-to-30 age period. No specific explanation of such a finding can be suggested besides the qualitative differences between these memory types. For instance, the bump with word-cued memories was supported by field memories whereas bump period from free recall memories were supported by observer and both perspectives.

It follows from the above findings that flashbulb memories do not appear as a completely distinct type of memory in terms of its quantitative distribution across the lifespan. However, flashbulb memories from all periods of the lifespan were found to be more vivid, significant and frequently talked about than word cued autobiographical memories, which is finding points to a qualitative difference between these two types of memories, at least in intensity.

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Appendices



APPENDIX A – MÜLAKAT SORULARI

Bu çalışma Boğaziçi Üniversitesi yüksek lisans programı bitirme tezi kapsamındadır.

Bu çalışma kişilerin geçmiş deneyimlerini nasıl hatırladığıyla ilgilidir.

Kesinlikle bir hafıza testi değildir.

İleri çalışmalarda kullanmak için, yaşadığınız ömür boyunca tanıklık ettiğiniz birtakım kişisel ve toplumsal olaylar hakkında bilgi sahibi olmak istiyoruz.

Çalışmaya katılmak tamamen gönüllüdür. İsteddiğiniz zaman bırakma hakkına sahipsiniz.

Katıldığınız için şimdiden teşekkür ederiz.

I- Otobiyografik Bellek Soruları

Şimdi size bazı kelimeler göstereceğim. Bu kelimelerin hatırıma getirdiği **ilk anıyı** kısaca anlatmanızı isteyeceğim. (Bu kelimelerin size çağrıştırdığı olayları ya da deneyimlerinizi hatırlamaya çalışınız.) Bunlar mutlaka sizin de içinde bulunduğunuz ya da tanık olduğunuz olaylar olmalıdır. Uzunluğu saniyeler, dakikalar veya saatler sürmüştü olabilir. Ama mesela, gün boyunca süren uzun bir olayı anlatmanızı istemiyoruz. Daha çok o uzun olayın kısa bir parçasını ya da başınızdan geçen kısa süreli, ayrıntılı ve özel bir anıyı anlatmanızı rica ediyoruz. Anlatacağınız olaylar çok ilginç ya da önemli olmak zorunda değildir, başınızdan geçen herhangi bir olayı anlatabilirsiniz. Mesela ben size “fırın” kelimesini söylersem; 5 yaşınızdayken annenizle gittiğiniz fırında, ekmek kalmadığını hatırlayabilirsiniz.

İlk kelimeyi gördükten sonra hemen cevap vermeyiniz. Kendinize düşünmek için süre tanıyınız. **AKLINIZA İLK GELEN OLAYI SÖYLEYİNİZ.**

Eskiden yaşadığınız ya da yeni bir olay olabilir.

Lütfen son bir sene içinde meydana gelmemiş olmasına dikkat ediniz.

Birden çok anı çağrışım yapıyorsa lütfen en uygun bulduğunuzu (en ayrıntılı olanı) seçiniz.

Yaşadığınız bu olayı bana 1-2 cümleyle tarif eder misiniz. Daha sonra üstünde konuştuğumuzda tanıyabilmek için birlikte bu anıya bir başlık bulalım.

Şimdi lütfen anlattığınız bu anı ile ilgili şu soruları yanıtlayınız.

- Bu olay o zamanki yaşantınız içinde ne derece önemli bir olaydı?

Hiç önemli değildi-1
 Pek önemli değildi-2
 Orta derecede önemli bir olaydı-3
 Önemli bir olaydı-4
 Çok önemli bir olaydı-5

- Bu olay şu anda sizin için ne kadar önemli?

Hiç önemli değil-1
 Pek önemli değil-2
 Orta derecede önemli bir olay-3
 Önemli bir olay-4
 Çok önemli bir olay-5

- Bu olayı kimlere anlattınız?

-
- Bu olay hakkında başkalarıyla ne sıklıkta konuştunuz? Ne sıklıkta anlattınız?

Hiç-1
 Biraz-2
 Çok anlattım-3

(Bu anıyı daha önce tahminen kaç kez anlattınız?)

- Bu anıyı daha önce ne kadar ayrıntılı anlattınız? (sadece anlatanlara sorulacak)

Hiç ayrıntılı anlatmadım-1
 Bazı ayrıntıları anlattım ama herşeyi değil-2
 Olayı bütün ayrıntılarıyla anlattım-3

- Bu olayı yaşadığınız an şu anda gözünüzde ne kadar canlı beliriyor?

1	2	3	4	5
hiç canlı değil	belli-belirsiz	biraz canlı	çok canlı	şu an yaşıyormuşum gibi

- Bu olay meydana gelmeden önce buna benzer bir olay yaşadınız mı?

Hayır, hiç yaşamadım-1
 Evet, buna benzer olay yaşadım-2

- Şimdi sizden bu olayı nasıl hatırladığınızla ilgili bilgi istiyoruz. İnsanlar bazı olayların sadece yaşandığını bilir fakat hiçbir ayrıntı hatırlamaz, gözünde canlandıramaz. Biz bu anılara **Bilinen** anılar diyoruz. Bazı anıları ise hatırlarken şu an yaşıyormuş hissine kapılır, olay ile ilgili ayrıntılar hatırlar. Bu ikinci tarzdakilere ise **Hatırlanan** anılar diyoruz. Mesela, annenizle gittiğiniz fırında ekmeği yapan kişinin hiç ekmekleri kalmadığını size söylemesini gözünüzde resim gibi canlandırabiliyorsanız, bu anıyı *hatırlıyorsunuz* demektir. Yok sadece o fırında ekmek olmadığı bilgisini anımsıyorsanız bu olayı sadece *biliyorsunuz* demektir. Şimdi lütfen bu _____ olayının size nasıl “geldiğini” tekrar düşününüz ve bu anıyı **Biliyorum** ya da **Hatırlıyorum** olarak sınıflandırınız.

K (Bilinen)

R (Hatırlanan)

- Yaşantılar, anılar iki türlü hatırlanır. Bazı anılar anlatanın bakış açısından hatırlanır. Anlatan kişi sanki olayı perdeye yansıtılan bir filmde izliyormuş gibi hatırlar. İkinci tür anılar ise o olayı sanki şu anda yaşıyormuş gibi, yaşayan kişni gözünden hatırlanır. Siz bu anıyı nasıl hatırlıyorsunuz?

O- Dışarıdan izleyen 3. bir kişinin gözünden (**observer**)

F- Olayı yaşayan kişinin gözünden (**field**)

- Bu anıyı/ olayı ne zaman yaşadığınızı hatırlıyor musunuz? Kabaca bir tarih belirtebilir misiniz? Kaç yaşınızda olduğunuzu hatırlıyor musunuz?

II- (Free-Recall) Flaş Bellek Soruları

Şimdi sizden en önemli gördüğünüz 5 olayı söylemenizi isteyeceğim. Kişisel ya da toplumsal farketmez. Böyle önemli olayların nasıl öğrenildiği genelde çok net hatırlanır. Mesala; bir yakınınızın hamile olduğunu ilk öğrendiğiniz an, ya da beklenmedik şekilde bir yere bomba düştüğü haberini aldığınız zaman gibi..Bu gibi anlarda insanlar nerede, kimlerle birlikte olduklarını net olarak hatırlarlar. Ben de sizden nasıl duyduğunuzu, öğrendiğiniz çok net hatırladığınız olayları hatırlamanızı istiyorum. İstedığınız kadar düşünebilirsiniz.

Bir tane söyleyin mesela ben size onun gibi olup olmadığını söyleyeyim.

- Evet, mesela bu olayı ilk duyduğunuz anı hatırlıyor musunuz?

Evet

Hayır

- Bu haberi duyduğunuz an şu anda gözünüzde ne kadar canlı beliriyor?

1	2	3	4	5
hiç canlı değil	belli-belirsiz	canlı	çok canlı	şu an yaşıyormuşum gibi

- Bu olayı ilk kimden/nereden duyduğunuzu hatırlıyor musunuz?

- Bu haberi aldığınızda saat tam olarak kaçtı?

- Bu haberi ilk duyduğunuzda nerede olduğunuzu hatırlıyor musunuz? Neredeydiniz?

- Olayı duyduğunuz esnada ne yaptığınızı hatırlıyor musunuz? Ne ile meşguldünüz?

- Olayı duyduğunuz esnada yanınızda kimler vardı?

- Olayı duyduğunuz/yaşadığınız sırada ne hissettiniz? (şaşkınlık, korku, heyecan vs.)

	Çok zayıf				Çok kuvvetli
1. _____	1	2	3	4	5
2. _____	1	2	3	4	5
3. _____	1	2	3	4	5

- Olay hakkında şu anda ne hissediyorsunuz? (şaşkınlık, korku, heyecan vs.)

	Çok zayıf				Çok kuvvetli
1. _____	1	2	3	4	5
2. _____	1	2	3	4	5
3. _____	1	2	3	4	5

- Bu olay sizin için ne kadar sürpriz/şaşırtıcı oldu?

1	2	3	4	5
hiç şaşırtıcı olmadı				son derece şaşırtıcı oldu

- Kendi günlük yaşamınızı düşündüğünüzde, bu haberi ilk kez duyduğunuzda meşgul olduğunuz iş/uğraş sizin için ne kadar sıradan bir uğraştı?

1	2	3	4	5
son derece sıradan; sık sık yaptığım bir şey				son derece sıradışı; normalde çok az yaptığım bir şey

- Bu olay o zamanki yaşantınız içinde ne derece önemli bir olaydı?

Hiç önemli değildi-1
Pek önemli değildi-2
Orta derecede önemli bir olaydı-3
Önemli bir olaydı-4
Çok önemli bir olaydı-5

- Şu anki değerlendirmenize göre bu olay ne kadar önemli bir olaydır?

Hiç önemli değil-1
Pek önemli değil-2
Orta derecede önemli bir olay-3
Önemli bir olay-4
Çok önemli bir olay-5

- Bu olay hakkında başkalarıyla ne sıklıkta konuştunuz? Ne sıklıkta anlattınız?

Hiç-1

Biraz-2

Çok anlattım-3

- Bu anıyı daha önce ne kadar ayrıntılı anlattınız? (sadece anlatanlara sorulacak)

Hiç ayrıntılı anlatmadım-1

Bazı ayrıntıları anlattım ama herşeyi değil-2

Olayı bütün ayrıntılarıyla anlattım-3

- Şimdi sizden bu olayı nasıl hatırladığınızla ilgili bilgi istiyoruz. İnsanlar bazı olayların sadece yaşandığını bilir fakat hiçbir ayrıntı hatırlamaz, gözünde canlandıramaz. Biz bu anılara **Bilinen** anılar diyoruz. Bazı anıları ise hatırlarken şu an yaşıyormuş hissine kapılır, olay ile ilgili ayrıntılar hatırlar. Bu ikinci tarzdakilere ise **Hatırlanan** anılar diyoruz. Mesela, annenizle gittiğiniz fırında ekmeği yapan kişinin hiç ekmekleri kalmadığını size söylemesini gözünüzde resim gibi canlandırabiliyorsanız, bu anıyı *hatırlıyorsunuz* demektir. Yok sadece o fırında ekmek olmadığı bilgisini anımsıyorsanız bu olayı sadece *biliyorsunuz* demektir. Şimdi lütfen bu _____ olayının size nasıl “geldiğini” tekrar düşününüz ve bu anıyı **Biliyorum** ya da **Hatırlıyorum** olarak sınıflandırınız.

K (Bilinen)

R (Hatırlanan)

- Yaşantılar, anılar iki türlü hatırlanır. Bazı anılar anlatanın bakış açısından hatırlanır. Anlatan kişi sanki olayı perdeye yansıtılan bir filmde izliyormuş gibi hatırlar. İkinci tür anılar ise o olayı sanki şu anda yaşıyormuş gibi, yaşayan kişni gözünden hatırlanır. Siz bu anıyı nasıl hatırlıyorsunuz?

O- Dışarıdan izleyen 3. bir kişinin gözünden (**observer**)

F- Olayı yaşayan kişinin gözünden (**field**)

- Bu olayın ne zaman meydana geldiğini hatırlıyor musunuz? Kabaca tarih belirtiniz. Kaç yaşında olduğunuzu hatırlıyor musunuz?

III- (Probed Recall) Flaş Bellek Soruları

Şimdi sizden bir takım önemli politik ya da toplumsal olayları, özellikle şaşırtıcı olayları nasıl öğrendiğinizi hatırlamanızı isteyeceğim. Bu sefer olayları kısa başlıklar halinde size ben söyleyeceğim.

- _____ haberini/ olayını ilk duyduğunuz anı hatırlıyor musunuz?

Evet

Hayır

- Bu haberi duyduğunuz an şu anda gözünüzde ne kadar canlı beliriyor?

1 2 3 4 5
hiç canlı değil belli-belirsiz canlı çok canlı olayı şu an yaşıyormuşum gibi

- Bu olayı ilk kimden/nere-den duyduğunuzu hatırlıyor musunuz?
- Bu haberi aldığınızda saat tam olarak kaçtı?
- Bu haberi ilk duyduğunuzda nerede olduğunuzu hatırlıyor musunuz? Neredeydiniz?
- Olayı duyduğunuz esnada ne yaptığınızı hatırlıyor musunuz? Ne ile meşguldünüz?
- Olayı duyduğunuz esnada yanınızda kimler vardı?
- Olayı duyduğunuz sırada ne hissettiniz? (şaşkınlık, korku, heyecan vs.) _____

Çok zayıf

Çok kuvvetli

1. _____	1	2	3	4	5
2. _____	1	2	3	4	5
3. _____	1	2	3	4	5

- Olay hakkında řu anda ne hissediyorsunuz? (řařkınlık, korku, heyecan vs.)_____

Çok zayıf

Çok kuvvetli

1. _____	1	2	3	4	5
2. _____	1	2	3	4	5
3. _____	1	2	3	4	5

- Bu olay sizin için ne kadar süpriz/řaşırtıcı oldu?

1	2	3	4	5
hiç řaşırtıcı olmadı				son derece řaşırtıcı oldu

- Kendi günlük yaşamınızı düşündüğünüzde, bu haberi ilk kez duyduğunuzda meşgul olduğunuz iş/uğraş sizin için ne kadar sıradan bir uğraşı?

1	2	3	4	5
son derece sıradan; sık sık ya da düzenli olarak yaptığım bir şeydi				son derece sıradışı; normalde çok az yaptığım bir şeydi

- Bu olay o zamanki yaşıantınız içinde ne derece önemli bir olaydı?

Hiç önemli değildi-1
Pek önemli değildi-2
Orta derecede önemli bir olaydı-3
Önemli bir olaydı-4
Çok önemli bir olaydı-5

- řu anki değeriendirmenize göre bu olay ne kadar önemli bir olaydır?

Hiç önemli değil-1
Pek önemli değil-2
Orta derecede önemli bir olay-3
Önemli bir olay-4
Çok önemli bir olay-5

- Bu olay hakkında, olaydan hemen sonra başkalarıyla ne sıklıkta konuştunuz? Ne sıklıkta anlattınız, tartıştınız? Bu haber hakkında yorumlara maruz kaldınız?

Hiç ayrıntılı anlatmadım-1

Bazı ayrıntıları anlattım ama herseyi değil-2

Olayı bütün ayrıntılarıyla anlattım-3

- Bu olay hakkında son bir yıl içinde ne sıklıkta konuştunuz ya da olayın üzerinde düşündünüz?

Hiç-1

Biraz-2

Çok-3

- Şimdi sizden bu olayı nasıl hatırladığınızla ilgili bilgi istiyoruz. İnsanlar bazı olayların sadece yaşandığını bilir fakat hiçbir ayrıntı hatırlamaz, gözünde canlandıramaz. Biz bu anılara **Bilinen** anılar diyoruz. Bazı anıları ise hatırlarken şu an yaşıyormuş hissine kapılır, olay ile ilgili ayrıntılar hatırlar. Bu ikinci tarzdaakilere ise **Hatırlanan** anılar diyoruz. Mesela, annenizle gittiğiniz fırında ekmeği yapan kişinin hiç ekmekleri kalmadığını size söylemesini gözünüzde resim gibi canlandırabiliyorsanız, bu anıyı *hatırlıyorsunuz* demektir. Yok sadece o fırında ekmek olmadığı bilgisini anımsıyorsanız bu olayı sadece *biliyorsunuz* demektir. Şimdi lütfen bu _____ olayının size nasıl “geldiğini” tekrar düşününüz ve bu anıyı **Biliyorum** ya da **Hatırlıyorum** olarak sınıflandırınız.

K (Bilinen)

R (Hatırlanan)

- Yaşantılar, anılar iki türlü hatırlanır. Bazı anılar anlatanın bakış açısından hatırlanır. Anlatan kişi sanki olayı perdeye yansıtılan bir filmde izliyormuş gibi hatırlar. İkinci tür anılar ise o olayı sanki şu anda yaşıyormuş gibi, yaşayan kişni gözünden hatırlanır. Siz bu anıyı nasıl hatırlıyorsunuz?

O- Dışarıdan izleyen 3. bir kişinin gözünden (**observer**)

F- Olayı yaşayan kişinin gözünden (**field**)

- Bu olayın ne zaman meydana geldiğini hatırlıyor musunuz? Kabaca bir tarih belirtebilir misiniz? Kaç yaşınızda olduğunuzu hatırlıyor musunuz?

APPENDIX B – KATILIMCI BİLGİ FORMU ve CEVAP FORMU

▪ ID NO:

▪ Yaş:

☐ Cinsiyet:

☐

☐

▪ Eğitim Durumu: (Lütfen en son mezun olduğunuz okulu belirtiniz.)

İlköğretim _____

Ortaöğretim _____

Lise _____

Yüksekokul _____

Üniversite _____

Yüksek Lisans _____

▪ Alanı:

▪ Mesleği:

▪ Emekli ise, kaç yıldır emekli:

▪ Emekli olduktan sonra ne işle meşgul oldunuz? (if relevant)

▪ Evde birlikte yaşadığınız kimseler var mı? Varsa kimler?

▪ Ne kadar süredir burada oturuyorsunuz? Şimdiye kadar nerede, ne sıklıkta yaşadınız?

▪ Boş vakitlerinizi nasıl değerlendirirsiniz? Sık sık yaptığınız aktiviteler nelerdir?

- kitap vs. okumak 1 az 2 biraz 3 çok

- gazete ve görsel yayın organlarını takip (haberleri izlemek): 1 az 2 biraz 3 çok

- sosyal gruplara (dernek, klüp, kütüphane vb) katılmak: 1 az 2 biraz 3 çok

- düzenli olarak gittiğiniz arkadaş toplantıları, klüp, orduvi, öğretmenleri gibi yerler var mı?

- Diğer _____

▪ Günde ortalama kaç saat TV izliyorsunuz?

▪ En çok hangi programları seyreliyorsunuz?

▪ Sürekli bir ilaç kullanıyor musunuz? ____Y

____N

Niçin kullanıyorsunuz?

KODLAMA SAYFASI

1 Bölüm. Otobiyografik Bellek

VAPUR Başlık:

O zamanki yaşantı içinde ne kadar önemli: 1_{hiç} 2 3 4 5_{çok}

Şu anda ne kadar önemli: 1_{hiç} 2 3 4 5_{çok}

Kimlere anlattınız:

Başkalarıyla ne sıklıkta konuştunuz: 1_{hiç} 2 3_{çok}

Daha önce ne kadar ayrıntılı anlatınız: 1_{hiç} 2 3_{çok}

Ne kadar canlı beliriyor: 1_{hiç} 2 3 4 5_{çok}

Benzer bir olay yaşadınız mı: E H

Know/remember: K R

Vantage point: F O

KADİFE Başlık:

O zamanki yaşantı içinde ne kadar önemli: 1_{hiç} 2 3 4 5_{çok}

Şu anda ne kadar önemli: 1_{hiç} 2 3 4 5_{çok}

Kimlere anlattınız:

Başkalarıyla ne sıklıkta konuştunuz: 1_{hiç} 2 3_{çok}

Daha önce ne kadar ayrıntılı anlatınız: 1_{hiç} 2 3_{çok}

Ne kadar canlı beliriyor: 1_{hiç} 2 3 4 5_{çok}

Benzer bir olay yaşadınız mı: E H

Know/remember: K R

Vantage point: F O

ZİL Başlık:

O zamanki yaşantı içinde ne kadar önemli: 1_{hiç} 2 3 4 5_{çok}
 Şu anda ne kadar önemli: 1_{hiç} 2 3 4 5_{çok}
 Kimlere anlattınız:
 Başkalarıyla ne sıklıkta konuştunuz: 1_{hiç} 2 3_{çok}
 Daha önce ne kadar ayrıntılı anlatınız: 1_{hiç} 2 3_{çok}
 Ne kadar canlı beliriyor: 1_{hiç} 2 3 4 5_{çok}
 Benzer bir olay yaşadınız mı: E H
 Know/remember: K R
 Vantage point: F O

ANAHTAR Başlık:

O zamanki yaşantı içinde ne kadar önemli: 1_{hiç} 2 3 4 5_{çok}
 Şu anda ne kadar önemli: 1_{hiç} 2 3 4 5_{çok}
 Kimlere anlattınız:
 Başkalarıyla ne sıklıkta konuştunuz: 1_{hiç} 2 3_{çok}
 Daha önce ne kadar ayrıntılı anlatınız: 1_{hiç} 2 3_{çok}
 Ne kadar canlı beliriyor: 1_{hiç} 2 3 4 5_{çok}
 Benzer bir olay yaşadınız mı: E H
 Know/remember: K R
 Vantage point: F O

ÇORBA Başlık:

O zamanki yaşantı içinde ne kadar önemli: 1_{hiç} 2 3 4 5_{çok}
 Şu anda ne kadar önemli: 1_{hiç} 2 3 4 5_{çok}
 Kimlere anlattınız:
 Başkalarıyla ne sıklıkta konuştunuz: 1_{hiç} 2 3_{çok}
 Daha önce ne kadar ayrıntılı anlatınız: 1_{hiç} 2 3_{çok}
 Ne kadar canlı beliriyor: 1_{hiç} 2 3 4 5_{çok}
 Benzer bir olay yaşadınız mı: E H

Know/remember: K R

Vantage point: F O

SANDIK Başlık:

O zamanki yaşantı içinde ne kadar önemli: 1_{hiç} 2 3 4 5_{çok}

Şu anda ne kadar önemli: 1_{hiç} 2 3 4 5_{çok}

Kimlere anlattınız:

Başkalarıyla ne sıklıkta konuştunuz: 1_{hiç} 2 3_{çok}

Daha önce ne kadar ayrıntılı anlatınız: 1_{hiç} 2 3_{çok}

Ne kadar canlı beliriyor: 1_{hiç} 2 3 4 5_{çok}

Benzer bir olay yaşadınız mı: E H

Know/remember: K R

Vantage point: F O

Anının yaşı: Kadife : _____
 Vapur : _____
 Zil : _____
 Anahtar : _____
 Çorba : _____
 Sandık : _____

II. Bölüm. Flaş Bellek -Free Recall-

1. _____

İlk duyduğunuz: E H

Ne kadar canlı: 1_{hiç} 2 3 4 5_{çok}

Nereden öğrendiniz:

Saat:

Kimlerleydiniz:

Neredeydiniz:

Ne işle meşguldünüz:

Duygu1then: 1_{hiç} 2 3 4 5_{çok}

Duygu2then: 1_{hiç} 2 3 4 5_{çok}

Duygu3then: 1_{hiç} 2 3 4 5_{çok}

Duygu1now: 1_{hiç} 2 3 4 5_{çok}

Duygu2now: 1_{hiç} 2 3 4 5_{çok}

Duygu3now: 1_{hiç} 2 3 4 5_{çok}

Şaşırtıcı 1_{hiç} 2 3 4 5_{çok}

Ne kadar sıradan: 1_{hiç} 2 3 4 5_{çok}

O zaman ne kadar önemli: 1_{hiç} 2 3 4 5_{çok}

şu an ne kadar önemli: 1_{hiç} 2 3 4 5_{çok}

Ne sıklıkta: 1_{hiç} 2 3

son bir yıl içinde: 1_{hiç} 2 3

R/K: R K

vantage point: F O

2. _____

İlk duyduğunuz: E H
 Ne kadar canlı: 1 hiç 2 3 4 5 çok
 Nereden öğrendiniz:
 Saat: Kimlerleydiniz:
 Neredeydiniz:
 Ne işle meşguldünüz:
 Duygu1then:1 hiç 2 3 4 5 çok Duygu2then:1 hiç 2 3 4 5 çok Duygu3then:1 hiç 2 3 4 5 çok
 Duygu1now:1 hiç 2 3 4 5 çok Duygu2now:1 hiç 2 3 4 5 çok Duygu3now:1 hiç 2 3 4 5 çok
 Şaşırtıcı 1 hiç 2 3 4 5 çok
 Ne kadar sıradan: 1 hiç 2 3 4 5 çok
 O zaman ne kadar önemli: 1 hiç 2 3 4 5 çok şu an ne kadar önemli: 1 hiç 2 3 4 5 çok
 Ne sıklıkta: 1 hiç 2 3 son bir yıl içinde: 1 hiç 2 3 çok
 R/K: R K vantage point: F O

3. _____

İlk duyduğunuz: E H
 Ne kadar canlı: 1 hiç 2 3 4 5 çok
 Nereden öğrendiniz:
 Saat: Kimlerleydiniz:
 Neredeydiniz:
 Ne işle meşguldünüz:
 Duygu1then:1 hiç 2 3 4 5 çok Duygu2then:1 hiç 2 3 4 5 çok Duygu3then:1 hiç 2 3 4 5 çok
 Duygu1now:1 hiç 2 3 4 5 çok Duygu2now:1 hiç 2 3 4 5 çok Duygu3now:1 hiç 2 3 4 5 çok
 Şaşırtıcı 1 hiç 2 3 4 5 çok
 Ne kadar sıradan: 1 hiç 2 3 4 5 çok
 O zaman ne kadar önemli: 1 hiç 2 3 4 5 çok şu an ne kadar önemli: 1 hiç 2 3 4 5 çok
 Ne sıklıkta: 1 hiç 2 3 son bir yıl içinde: 1 hiç 2 3 çok
 R/K: R K vantage point: F O

4. _____

İlk duyduğunuz: E H
 Ne kadar canlı: 1 hiç 2 3 4 5 çok
 Nereden öğrendiniz:
 Saat: Kimlerleydiniz:
 Neredeydiniz:
 Ne işle meşguldünüz:

Duygu1then:1 hiç 2 3 4 5 çok Duygu2then:1 hiç 2 3 4 5 çok Duygu3then:1 hiç 2 3 4 5 çok
 Duygu1now:1 hiç 2 3 4 5 çok Duygu2now:1 hiç 2 3 4 5 çok Duygu3now:1 hiç 2 3 4 5 çok
 Şaşırtıcı 1 hiç 2 3 4 5 çok
 Ne kadar sıradan: 1 hiç 2 3 4 5 çok
 O zaman ne kadar önemli: 1 hiç 2 3 4 5 çok şu an ne kadar önemli: 1 hiç 2 3 4 5 çok
 Ne sıklıkta: 1 hiç 2 3 son bir yıl içinde: 1 hiç 2 3 çok
 R/K: R K vantage point: F O

5. _____

İlk duyduğunuz: E H
 Ne kadar canlı: 1 hiç 2 3 4 5 çok
 Nereden öğrendiniz:
 Saat: Kimlerleydiniz:
 Neredeydiniz:
 Ne işle meşguldünüz:
 Duygu1then:1 hiç 2 3 4 5 çok Duygu2then:1 hiç 2 3 4 5 çok Duygu3then:1 hiç 2 3 4 5 çok
 Duygu1now:1 hiç 2 3 4 5 çok Duygu2now:1 hiç 2 3 4 5 çok Duygu3now:1 hiç 2 3 4 5 çok
 Şaşırtıcı 1 hiç 2 3 4 5 çok
 Ne kadar sıradan: 1 hiç 2 3 4 5 çok
 O zaman ne kadar önemli: 1 hiç 2 3 4 5 çok şu an ne kadar önemli: 1 hiç 2 3 4 5 çok
 Ne sıklıkta: 1 hiç 2 3 son bir yıl içinde: 1 hiç 2 3 çok
 R/K: R K vantage point: F O

Anının yaşı: 1 : _____
 2 : _____
 3 : _____
 4 : _____
 5 : _____

III. Bölüm Flaş Bellek -Probed Recall-

Lotus faciası-1926

İlk duyduğunuz: E H
 Ne kadar canlı: 1 hiç 2 3 4 5 çok
 Nereden öğrendiniz:
 Saat: Kimlerleydiniz:
 Neredeydiniz:
 Ne işle meşguldünüz:
 Duygu1then:1 hiç 2 3 4 5 çok Duygu2then:1 hiç 2 3 4 5 çok Duygu3then:1 hiç 2 3 4 5 çok
 Duygu1now:1 hiç 2345 çok Duygu2now: 1 hiç 2345 çok Duygu3now: 1 hiç 2345 çok
 Şaşırtıcı 1 hiç 2 3 4 5 çok
 Ne kadar sıradan: 1 hiç 2 3 4 5 çok
 O zaman ne kadar önemli: 1 hiç 2 3 4 5 çok şu an ne kadar önemli: 1 hiç 2 3 4 5 çok
 Ne sıklıkta: 1 hiç 2 3 son bir yıl içinde: 1 hiç 2 3 çok
 R/K: R K vantage point: F O

Atatürk'ün ölümü-1938

İlk duyduğunuz: E H
 Ne kadar canlı: 1 hiç 2 3 4 5 çok
 Nereden öğrendiniz:
 Saat: Kimlerleydiniz:
 Neredeydiniz:
 Ne işle meşguldünüz:
 Duygu1then:1 hiç 2 3 4 5 çok Duygu2then:1 hiç 2 3 4 5 çok Duygu3then:1 hiç 2 3 4 5 çok
 Duygu1now:1 hiç 2345 çok Duygu2now: 1 hiç 2345 çok Duygu3now: 1 hiç 2345 çok
 Şaşırtıcı 1 hiç 2 3 4 5 çok
 Ne kadar sıradan: 1 hiç 2 3 4 5 çok
 O zaman ne kadar önemli: 1 hiç 2 3 4 5 çok şu an ne kadar önemli: 1 hiç 2 3 4 5 çok
 Ne sıklıkta: 1 hiç 2 3 son bir yıl içinde: 1 hiç 2 3 çok
 R/K: R K vantage point: F O

Refah faciası-1941

İlk duyduğunuz: E H
 Ne kadar canlı: 1 hiç 2 3 4 5 çok
 Nereden öğrendiniz:
 Saat: Kimlerleydiniz:
 Neredeydiniz:
 Ne işle meşguldünüz:
 Duygu1then:1 hiç 2 3 4 5 çok Duygu2then:1 hiç 2 3 4 5 çok Duygu3then:1 hiç 2 3 4 5 çok
 Duygu1now:1 hiç 2345 çok Duygu2now: 1 hiç 2345 çok Duygu3now: 1 hiç 2345 çok
 Şaşırtıcı 1 hiç 2 3 4 5 çok
 Ne kadar sıradan: 1 hiç 2 3 4 5 çok
 O zaman ne kadar önemli: 1 hiç 2 3 4 5 çok şu an ne kadar önemli: 1 hiç 2 3 4 5 çok
 Ne sıklıkta: 1 hiç 2 3 son bir yıl içinde: 1 hiç 2 3 çok
 R/K: R K vantage point: F O

6-7 Eylül olayları-1955

İlk duyduğunuz: E H

Ne kadar canlı: 1 hiç 2 3 4 5 çok

Nereden öğrendiniz:

Saat:

Kimlerleydiniz:

Neredeydiniz:

Ne işle meşguldünüz:

Duygu1then: 1 hiç 2 3 4 5 çok

Duygu2then: 1 hiç 2 3 4 5 çok

Duygu3then: 1 hiç 2 3 4 5 çok

Duygu1now: 1 hiç 2345 çok

Duygu2now: 1 hiç 2345 çok

Duygu3now: 1 hiç 2345 çok

Şaşırtıcı 1 hiç 2 3 4 5 çok

Ne kadar sıradan: 1 hiç 2 3 4 5 çok

O zaman ne kadar önemli: 1 hiç 2 3 4 5 çok

şu an ne kadar önemli: 1 hiç 2 3 4 5 çok

Ne sıklıkta: 1 hiç 2 3

son bir yıl içinde: 1 hiç 2 3 çok

R/K: R K

vantage point: F O

1960 ihtilali-1960

İlk duyduğunuz: E H

Ne kadar canlı: 1 hiç 2 3 4 5 çok

Nereden öğrendiniz:

Saat:

Kimlerleydiniz:

Neredeydiniz:

Ne işle meşguldünüz:

Duygu1then: 1 hiç 2 3 4 5 çok

Duygu2then: 1 hiç 2 3 4 5 çok

Duygu3then: 1 hiç 2 3 4 5 çok

Duygu1now: 1 hiç 2345 çok

Duygu2now: 1 hiç 2345 çok

Duygu3now: 1 hiç 2345 çok

Şaşırtıcı 1 hiç 2 3 4 5 çok

Ne kadar sıradan: 1 hiç 2 3 4 5 çok

O zaman ne kadar önemli: 1 hiç 2 3 4 5 çok

şu an ne kadar önemli: 1 hiç 2 3 4 5 çok

Ne sıklıkta: 1 hiç 2 3

son bir yıl içinde: 1 hiç 2 3 çok

R/K: R K

vantage point: F O

İsmet İnönü'nün ölümü-1973

İlk duyduğunuz: E H

Ne kadar canlı: 1 hiç 2 3 4 5 çok

Nereden öğrendiniz:

Saat:

Kimlerleydiniz:

Neredeydiniz:

Ne işle meşguldünüz:

Duygu1then: 1 hiç 2 3 4 5 çok

Duygu2then: 1 hiç 2 3 4 5 çok

Duygu3then: 1 hiç 2 3 4 5 çok

Duygu1now: 1 hiç 2345 çok

Duygu2now: 1 hiç 2345 çok

Duygu3now: 1 hiç 2345 çok

Şaşırtıcı 1 hiç 2 3 4 5 çok

Ne kadar sıradan: 1 hiç 2 3 4 5 çok

O zaman ne kadar önemli: 1 hiç 2 3 4 5 çok

şu an ne kadar önemli: 1 hiç 2 3 4 5 çok

Ne sıklıkta: 1 hiç 2 3

son bir yıl içinde: 1 hiç 2 3 çok

R/K: R K

vantage point: F O

Özal'a suikast-1988

İlk duyduğunuz: E H
 Ne kadar canlı: 1 hiç 2 3 4 5 çok
 Nereden öğrendiniz:
 Saat: Kimlerleydiniz:
 Neredeydiniz:
 Ne işle meşguldünüz:
 Duygu1then:1 hiç 2 3 4 5 çok Duygu2then:1 hiç 2 3 4 5 çok Duygu3then:1 hiç 2 3 4 5 çok
 Duygu1now:1 hiç 2 3 4 5 çok Duygu2now:1 hiç 2 3 4 5 çok Duygu3now:1 hiç 2 3 4 5 çok
 Şaşırtıcı 1 hiç 2 3 4 5 çok
 Ne kadar sıradan: 1 hiç 2 3 4 5 çok
 O zaman ne kadar önemli: 1 hiç 2 3 4 5 çok şu an ne kadar önemli: 1 hiç 2 3 4 5 çok
 Ne sıklıkta: 1 hiç 2 3 son bir yıl içinde: 1 hiç 2 3 çok
 R/K: R K vantage point: F O

Özal'ın ölümü-1993

İlk duyduğunuz: E H
 Ne kadar canlı: 1 hiç 2 3 4 5 çok
 Nereden öğrendiniz:
 Saat: Kimlerleydiniz:
 Neredeydiniz:
 Ne işle meşguldünüz:
 Duygu1then:1 hiç 2 3 4 5 çok Duygu2then:1 hiç 2 3 4 5 çok Duygu3then:1 hiç 2 3 4 5 çok
 Duygu1now:1 hiç 2 3 4 5 çok Duygu2now:1 hiç 2 3 4 5 çok Duygu3now:1 hiç 2 3 4 5 çok
 Şaşırtıcı 1 hiç 2 3 4 5 çok
 Ne kadar sıradan: 1 hiç 2 3 4 5 çok
 O zaman ne kadar önemli: 1 hiç 2 3 4 5 çok şu an ne kadar önemli: 1 hiç 2 3 4 5 çok
 Ne sıklıkta: 1 hiç 2 3 son bir yıl içinde: 1 hiç 2 3 çok
 R/K: R K vantage point: F O

11 Eylül hava saldırısı-2000

İlk duyduğunuz: E H
 Ne kadar canlı: 1 hiç 2 3 4 5 çok
 Nereden öğrendiniz:
 Saat: Kimlerleydiniz:
 Neredeydiniz:
 Ne işle meşguldünüz:
 Duygu1then:1 hiç 2 3 4 5 çok Duygu2then:1 hiç 2 3 4 5 çok Duygu3then:1 hiç 2 3 4 5 çok
 Duygu1now:1 hiç 2 3 4 5 çok Duygu2now:1 hiç 2 3 4 5 çok Duygu3now:1 hiç 2 3 4 5 çok
 Şaşırtıcı 1 hiç 2 3 4 5 çok
 Ne kadar sıradan: 1 hiç 2 3 4 5 çok
 O zaman ne kadar önemli: 1 hiç 2 3 4 5 çok şu an ne kadar önemli: 1 hiç 2 3 4 5 çok
 Ne sıklıkta: 1 hiç 2 3 son bir yıl içinde: 1 hiç 2 3 çok
 R/K: R K vantage point: F O

APPENDIX C – List of Free Recall Events and their Percent of Mention

<u>Event Name</u>	<u>Percent of Mention</u>	<u>Frequency</u>
Private Events	30.0	38
1960 Revolution-1960	7.3	9
Execution of Menderes-1961	7.3	9
Cyprus Invasion-1974	6.5	8
1999 Earthquake-1999	6.5	8
Bombing of HSBC Bank-2003	6.5	8
Death of Ataturk-1938	4.0	5
1980 Revolution-1980	4.0	5
September 6/7 (attacks at Rums)-1955	4.0	5
Execution of Deniz Gezmiş-1972	2.4	3
Korean War-1950	2.4	3
Start of World War II-1940	2.4	3
Other major Earthquakes-1992	2.4	3
DP becoming the ruling party-1950	1.6	2
Great Fire at Kapalıca-1943	1.6	2
Bombing of Synagogues-2003	1.6	2
World War II- military regime-1942	0.8	1
September 11-WTC-2000	0.8	1
Exchange of residents -1930	0.8	1
Ship Accident at İzmit-1958	0.8	1
Assassination of Israeli Consul-1971	0.8	1
Start of color broadcasting-1981	0.8	1
Death of Muhsin Ertuğrul-1979	0.8	1
Death of Muammer Karaca-1978	0.8	1
Yılmaz Güney's murder attempt-1974	0.8	1
Abolishing "Village Institutes"-1954	0.8	1

APPENDIX D – List of Free Recall Events and their brief descriptions

Event Name	Description
1960 Revolution-1960	A military coup to abolish ruling of Democratic Peak to prepare a new constitution
Execution of Menderes-1961	Execution of former prime minister of Turkey
Cyprus Military Operation-1974	A military operation on the northern part of the Cyprus Island by Turkish forces to claim rights of Turkish minorities in Cyprus against Greek forces
1999 Earthquake	A major earthquake in Turkey-Golcuk with great loss
Bombing of HSBC Bank-2003	Terrorist attacks on HSBC Bank
Death of Ataturk-1938	Death of the first President of Turkey and founder of Turkish Republic
1980 Revolution-1980	A military coup
September 6/7 - 1955	Attacks on Rum residents in Istanbul, plundering of their properties
Execution of Deniz Gezmiş-1972	Execution by hanging of three leftist activists
Korean War-1950	Turkey's decision to send troops to Korean War
Start of World War II-1940	News of the declaration of war by Germany
Other major Earthquakes-1992	Other major earthquakes in Turkey-1939 Mus/1992 Erzincan with great losses
DP' becoming ruling party-1950	Democratic Peak's becoming the first party in the 1950 elections
Fire at Kapalıcarsi-1943	The great fire at Kapalıcarsi, a center for trade in Istanbul, a total of 202 stores were destroyed
Bombing of Synagogues-2003	Terrorist attacks on two synagogues in Istanbul
World War II- 1942	Announcement of a military regime at northwestern parts of Turkey pointing to Turkey's possible joining to the war
September 11-WTC-2000	Terrorist attacks on World Trade Center in New York
Exchange of residents -1930	Announcement of the exchange of residents between Greece and Turkey

Ship Accident at Izmit-1958	The greatest ship accident in Turkish history in Izmit in which hundreds of students were drown
Assassination of Israeli Consul-1971	Israeli Consul Efraim Elrom assassinated in Istanbul.
Start of color broadcasting-1981	Tests of color broadcasts of Turkey National Televisions
Death of Muhsin Ertugrul-1979	Death of a popular actor and the founder of modern Turkish theatre and cinema
Death of Muammer Karaca-1978	Death of a famous actor and director
Yilmaz Guney's murder attempt-1974	A famous actor and director murdered a judge.
Abolishment "Village Institutes"-1954	Abolishment of an educational mobilisation program for social change

